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AMERICAN UNIVERSITIES: THEIR RESEMBLANCES AND THEIR DIFFERENCES[1]

"The American colleges and universities seem to the public and to their own constituencies to be very different; but as a matter of fact they are much alike, and what is more, they exhibit in a striking degree the same tendencies. In durable institutions tendency is quite as important as actual condition. It is my purpose in this lecture, first, to point out the fundamental similarities among the higher institutions of learning in the United States, and then to indicate briefly the nature and probable outcome of the differences they exhibit. I ought to premise, however, that my remarks will have no application to the group of American institutions which derive from the Roman Church their form of government, their discipline, and their program of studies. This firmly established group of colleges, which are chiefly under the control of the Society of Jesus, breathe the American atmosphere, and are not wholly inaccessible to the spirit of modern science; but being essentially ecclesiastical in structure and methods, they bear little resemblance to the ordinary American college, which is historically Protestant in origin and development, and distinctly secular, tho not irreligious.

"I. The first likeness I wish to point out is the likeness in the constitutions of the bodies which own and govern the

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American institutions of higher education. At first sight these bodies seem unlike, and there are certainly many diversities among them; but there is a strong tendency toward the same constitution—a tendency which is due to like desires or objects, and to like experiences in the actual working of the bodies originally set up. When the General Court of Massachusetts Bay created in 1642, by a natural inventive process, the first Governing Board for Harvard College, the Act prescribed that it should be composed of the Governor and Deputy Governor, the magistrates of the jurisdiction, and the teaching elders of six adjoining towns, with the President of the College. That is, the General Court intrusted the infant college to a large group of the leading persons in the little colony. This same sort of thing has since been done all over the country. By skipping 225 years and 1000 miles westward, I can take an illustration of this truth from the University of Illinois, which was established in 1867. This university was placed under the control of a Board of Trustees, consisting of the Governor, the Superintendent of Public Instruction, the President of the State Board of Agriculture, and twenty-eight citizens appointed by the Governor. The twenty-eight citizens appointed by the Governor have since been changed to nine elective members; but the idea of the original structure was much the same as that underlying the first Harvard Governing Board, except that the churches had no representation as such. Going on to the Pacific, we find the University of California governed by a Board of Regents, seven of whom—including the President of the University—are ex-officio Regents, and sixteen are long-term appointed Regents, representing the various professions and business occupations, and to some extent the most important California communities. When Cornell University was incorporated in 1865 a very similar collection of men was set up as Trustees, eight of them—including the President and Librarian of the University—being ex-officio members of the Board, and the other thirty being leading representatives of the various professions and business occupations mostly within the State of New York. The original Governing Board of Yale University was composed exclusively of

Congregational ministers, and remained in that condition for ninety-one years; but in 1872 there were added to this original Board the Governor, Lieutenant-Governor, and six senior assistants in the Council of Connecticut. These six senior assistants were subsequently changed to six senior senators. Thus, more than one hundred years ago the Governing Board of Yale University was brought into close resemblance to the original Harvard Board. These few illustrations really cover all the essential varieties in the single Boards of Trustees.

"Within eight years of the Act that established the Overseers of Harvard College the General Court of Massachusetts established a smaller Board under the title of the President and Fellows of Harvard College, without repealing the Act that had established the Overseers of Harvard College. The new Board consisted of but seven men, including the President and the Treasurer of the University; and to this small Board the general power of initiation and all money powers were committed, the Overseers becoming a reviewing and examining body whose consent was required to important measures, but which had little power to originate measures. Thus early Harvard University acquired the double-headed or bicameral organization that has proved invaluable in political constitutions, being in this respect the most fortunate of all the American institutions of learning. The same motives, however, which determined the General Court of Massachusetts to charter the President and Fellows of Harvard College have prevailed in all subsequent cases, tho not expressed as at Harvard thru the preferable method of establishing a separate Governing Board. The large body of Trustees of an American college or university cannot meet frequently. The members are too numerous, and their residences are so widely scattered that meetings are costly and troublesome. Moreover, they are too large for active executive functions. They have, therefore, as a rule, given large powers to an executive or prudential committee, the members of which can be conveniently brought together, and can give much time and thought to the affairs of the University. In this way many of the advantages of the bicameral organization of Harvard

have been secured by the other American institutions. The initiating body is the executive committee, and the Trustees inquire, examine, and approve or consent.

"The composition of the first Harvard Governing Board—the Overseers—has been repeatedly altered by the Legislature. The original composition was altered in 1780 to the Governor, Lieutenant-Governor, Council and Senate of the Commonwealth, with the President of Harvard College and the ministers of the Congregational churches of the six towns. Thirty years later the Board was reconstituted as follows: The Governor, Lieutenant-Governor, Councilors, President of the Senate, and Speaker of the House of Representatives, and the President of Harvard College, with fifteen ministers of Congregational churches and fifteen laymen elected by the ballots of the majority of the Overseers. A few years later the Senate of the Commonwealth was incorporated in the Board of Overseers. In 1834 it was enacted that ministers of any denomination might be elected to the Board of Overseers. In 1851 the Senate was dropped and the Board was made up of the usual ex-officio members and thirty persons elected by the Senators and Representatives of the Commonwealth in six equal classes, each class to serve six years. Finally, in 1865, the power to elect these thirty Overseers in six classes was conferred on persons who have received from the College the degree of Bachelor of Arts, or Master of Arts, or any honorary degree, voting on Commencement Day in the City of Cambridge. This series of changes in the Harvard Board of Overseers perfectly illustrates certain common tendencies in American institutions of the higher education which will ultimately bring them all to a great similarity so far as their governing bodies are concerned: in the first place, the amount of political control tends to diminish; secondly, the religious denominations lose influence; and thirdly, the graduates of an institution as such come into possession of some power over it. The state universities have steadily endeavored to diminish the influence of politics in the selection of their Boards of Trustees or Regent; and they have also successfully excluded denominational control—not without effort, to be sure; for strangely enough, there was formerly

a considerable amount of denominational control over some state universities, exhibited for the most part in the successive elections of presidents. Finally, many of the older American colleges and universities have succeeded in providing, sometimes by new legislation, and sometimes by tacit understandings, that a portion of the members of the single Board of Trustees shall be elected by the graduates of the institution. Thus, ten of the Trustees of Cornell University are elected by the alumni, and six of the members of the Yale Corporation have been so elected since 1872, these six being graduates of the University. The tendency to exclude political considerations and influences from the government of all colleges and universities is strong, and will undoubtedly become effectual within a moderate number of years, with rare and temporary exceptions. The new Carnegie Foundation, which provides pensions for teachers, except in institutions under denominational control, will help to induce institutions of learning to rid themselves completely of that control. It is so natural and proper to give some influence over the fortunes of a college or university to the body of its graduates, so soon as that body becomes large and strong, that the third tendency above mentioned is sure to be more and more exhibited. It can hardly come into full play, however, until the institution has been graduating young men for at least forty years.

" II. Another respect in which the American institutions of learning resemble each other is in the constitution and functions of the body of teachers called the Faculty, and in the relations of that body to the Governing Board and to the students. In almost all cases the Faculty has no legal powers, these powers residing in the Governing Board or Boards, but is nevertheless entrusted with very important duties. It ordinarily has the control of terms of admission, of studies, of terms of graduation, and of rules of conduct. The teachers composing this body are paid salaries, which constitute their entire compensation, they deriving no income directly from the students. All American institutions are alike in this respect, and therein they all differ from most European institutions. At Oxford and Cambridge the tutor receives a fee for each student to whom he

gives direct personal instruction, and the annual sum total of these fees may be larger than the highest salary of an American professor. At most Continental universities a portion of the professor's income comes from the fees paid by the students who take his courses and this portion of his income may be manifold larger than his fixed salary. There is no corresponding practice in the American institutions. The recent introduction of preceptors at Princeton University, inaccurately described in the newspapers as a copying of the English method, preserves the American custom that the college pays for all the instruction which the student receives—that is, the preceptors are to be paid fixed salaries, and are not to receive fees proportionate to the number of young men who take advantage of their instruction. In this respect a striking uniformity of practice has grown up in American institutions, in a perfectly natural way thru imitation of the earliest institutions, and because of the conformity of the practice to American needs and preferences.

"The subjects of instruction which an American Faculty will ordinarily deal with, unless the institution has very scanty means, are singularly uniform. Even a small and poor college will undertake to provide instruction in the classics and at least five modern languages, in mathematics, physics, chemistry, biology, and geology, with some of their applications, and in history, political science, economics, sociology, and philosophy. This list is much like the list of subjects that were to be taught in the University of Virginia, as declared in the Act of the General Assembly on January 25, 1819, except that Jefferson's list included the principles of agriculture, anatomy, medicine, the law of nature and nations, and municipal law, and was therefore much in advance of its time. It should also be said that the University of Virginia contained in its eight independent schools of ancient languages, modern languages, mathematics, etc., the germ of the present organization of a University Faculty into separate departments. There is now a large amount of consent as to the main topics a Faculty of the liberal arts should teach; and the list is a decidedly comprehensive one. In all American institutions of any size the list includes many

more subjects than any one student can pursue during the years of his residence.

"The professors in an American institution are, as a rule, independent in their work, and themselves conduct the examinations in their several courses. They are not subject to outside bodies of examiners. Their instruction is not limited by the scope of an examination paper which another authority sets; and even the control of the Faculty as a body over the work of an individual professor is so tenderly used as to be but rarely felt as a check on the individual teacher's will. The general assumption about the tenure of a professor is that his office is for life. Occasionally, in very new institutions, or in institutions over which political spoilsmen have won some control, exceptions to this rule come to the knowledge of the public; but the dismissal of professors is generally regarded by the public as evidence of an institution's inexperience, or of some temporary intrusion of forces or heats alien to the common university spirit.

"The conduct of Governing Boards towards members of a Faculty is generally marked by a high degree of respect and consideration; and great weight is attached to the Faculty's advice on all matters lying within their recognized province. This is one of the reasons for the preference all American scholars exhibit for the service of colleges and universities rather than of public schools. Another reason for this preference is the departmental organization of instruction in all American colleges and universities. This organization began at Harvard College in 1766, and was then an invention of great novelty and interest. Previous to that time one tutor had given instruction in all subjects to the whole of a College class during the four years of its residence, a few lectures by the two or three professors being added to this large body of instruction given by one man. The departmental method in one hundred and forty years has spread all over the country, and has become universal in the institutions of higher education. It has also pretty well penetrated the secondary schools, and is on its way into the lower grades. Even during the last fifteen years the departments of instruction in the large universities, like Yale,

Columbia, and Cornell among the endowed institutions, and Michigan, Wisconsin, and California among the State universities, have gained much influence and power, because they have been organized better and better, and their membership has become more numerous and more united in the pursuit of common ends. At Harvard University the development of the department in merit and power as a working body has been one of the most striking internal improvements of the last ten years. A peculiarity of this development at Harvard has been that the chairman of a department is ordinarily changed every few years, and that in the choice seniority is not much regarded. Even an assistant professor may be chairman.

"III. An American Faculty almost always feel a strong sense of responsibility for the conduct of their students, and give much thought to the effects of their teachings and rules and of the common academic life on the character of the student. Not every professor feels this responsibility; but nevertheless a sense of duty towards the students in respect to the formation of character may be said to be characteristic of all the American Faculties; and in this respect they all differ widely from similar bodies in Europe. The German professor, or the French professor, desires to impart to his students instruction and inspiration. He wishes to command their respect, rouse their ambition, and open their minds; but he seldom feels much responsibility for the conduct of university students. The old English universities inherited some monastic habits and a purpose to control the conduct of their students by physical means, such as requiring their habitual presence in chapel and dining hall at fixed hours, and the regular occupation of their chambers at night behind bars and gates; and to this day college buildings at Oxford and Cambridge are constructed with reference to these survivals of an antiquated discipline. The American college professor or instructor, in whatever part of the country he works, feels his responsibilities, but of course has none of the archaic English means and methods of exercising a physical control over his students. He trusts to example, to good traditions, and to that exhortation or guidance which rules supply, even when it is notorious that they cannot be uni-

formly enforced. The Faculty is generally re-enforced in the exercise of their moral control by the public opinion of the alumni and by the esprit de corps of the students; but these supports are rather influences than forces. Hence the great importance in all the institutions of higher education, where large numbers of students congregate, of the transmissible spirit of the place, or the body of traditions handed down year by year from the older to the younger students. This spirit of the place is a compound of transmitted sentiments, manners, and customs. There are numerous varieties of it; and yet the resemblances between the spirits, tempers, or atmospheres of different institutions greatly exceed the differences. The sentiments nourished at all the American seats of learning are partially indicated by the few words which find place as mottoes on their seals, such as truth, light, learning, knowledge and training, labor, the people's safety, and freedom thru the truth. Baccalaureate and Commencement addresses of exhortation, congratulation, and hope are astonishingly alike at all the colleges and universities; for the reason that the institutions cherish the same aspirations and ideals. They are all ardent believers in the possibility of increasing human efficiency and happiness. When they study evils and abuses, it is in the hope of discovering remedies or preventives. When they give much attention, as most of them have lately done, to studies in history, economics, and government, they are looking for guidance to feasible reform and sound progress. The same altruistic spirit actuates them all.

"The sense of responsibility for the conduct of the students and for the reputation of the university leads naturally to the devotion of an appreciable proportion of an American professor's time to matters of administration. The growing authority of the department as an organization has a similar tendency. The group of teachers that constitute a department are naturally ambitious to promote the study of their subject, to increase the amount of instruction offered by it, to improve the quality of that instruction, and to win for their department the increasing respect of the Faculty and the students. They are always conferring with each other and with the older students

for the promotion of these ends; and an appreciable proportion of their working time is spent in these administrative ways. The general welfare of the institution and its position among the neighboring or kindred institutions are subjects of discussion in the Faculty and its numerous committees; and these discussions take time and tax vitality. On many professors who are by nature attractive and sympathetic the students make exhausting demands for counsel and encouragement. The prosperous and progressive American institutions are all alike in expecting services of this nature from professors and other teachers, both old and young; so that the dispatch of some administrative duties is a common part of the function of an American professor.

"Another call often made on the American teacher is to create or care for collections, and to conduct the business of laboratories. These businesslike functions are not unwelcome to professors who are fit for them. Indeed, some professors like these functions better than any others, and make themselves more useful in these directions than they could in any other; but, welcome or unwelcome, they fall to the lot of a large proportion of the higher teachers of a university, and take their time away not only from teaching but from research. To the creation and care of collections some of the most eminent American scientists gave a large proportion of their time, as, for example, Asa Gray, the botanist, and Louis Agassiz, the zoölogist, at Harvard; James D. Dana, the geologist, and O. C. Marsh, the palæontologist, at Yale; James Hall, the geologist, at Albany; and Joseph Henry, the physicist, who was for thirty-two years Secretary of the Smithsonian Institution at Washington. Innumerable lesser men have devoted to administrative work, or to libraries, collections, and laboratories very significant portions of their total working time.

"The governing bodies of American universities being generally composed of men not themselves experts in any of the university activities, the real direction of those activities devolves on the professors and other teachers; and there is no avoiding this delegation of power. For an American professor, or an American Faculty as a whole, such questions as

these are always open—how much administrative work shall fall to a professor? to what extent may administrative work, including museum work, be safely entrusted to special officials who are not teachers, but devote themselves almost exclusively to administration? and to what extent should scientific investigation and literary productiveness be made the function of men separated from the large class of university teachers, and expected to devote themselves to original research? Thus far, the expectation of all the American colleges and universities has been to combine these three functions—teaching, administration, and research—or at least two of them, in the single person of the professor; and to-day this remains the commonest expectation, especially in the sciences, both pure and applied. Of late years the demand for men as professors who are capable of original research has been rising; that is, in selecting professors more account has lately been taken of proved capacity in this direction than used to be; but still there are very few positions in the United States where the prosecution of scientific investigation is made the chief business of a professor. In the thought of American college trustees, research and literary production are not separate functions, but accompaniments of teaching, to be maintained all the time, like bodily exercise, in connection with other stated occupations. The Germans have done more than any other people to create positions for investigators; and they have invented and put into force certain regulations for such positions which tend to secure the continuous activity of their incumbents. These regulations prescribe a moderate amount of public teaching by lectures or periodical reports, and the instruction and training of some small number of assistants and advanced students who are frequently replaced. They really effect a combination of investigation with teaching, under the expectation that the greater part of the vital force of the professor will go to investigation. The triple function of the American professor and the American Faculty illustrates perfectly the community of ideals in the institutions of higher education. American colleges and universities are unanimously of James Mill's opinion that to propagate the truth and to serve mankind are the only worthy objects

of ambition; but with them to propagate means to seek, discover, and bring forth truth, as well as to diffuse it. To accomplish these—the only worthy objects—requires direct teaching, conscientious administration, and eager research—all three.

"IV. All the American colleges have now adopted the elective system of studies, tho not all to the same degree or extent. In general, a college or university teaches as many of the subjects for which there is a visible demand as the pecuniary resources of the institution permit; or, in other words, it maintains as broad an elective system as the number of teachers it is prepared to pay for can provide. There is, however, one other important limitation of the application of the elective system in the American colleges. Most of them receive their pupils from the secondary schools in such a condition that they feel obliged to devote one year, or even more, to studies appropriate to the secondary schools but not pursued there. They combine with these belated subjects a few of the most elementary subjects appropriate to colleges, and thus make up a prescribed Freshman year, or, in some instances, a prescribed course for the Freshman and Sophomore years. This policy is, of course, a temporary one. It has already disappeared in some of the strongest institutions; and its complete disappearance in the American colleges and universities is only a question of time, for its evils are considerable. It reduces undesirably the number of years which the student can devote to the subject, or subjects, of his choice. It will make, for example, a great difference in the attainments of a young student of economics, or government, or physics, whether he can take a succession of courses, one or two at a time, in his chosen subject during four years, or three years, or only two years. The third or the fourth year given to advanced courses in his chosen subject is vastly more profitable than either of the underlying years. The ambition of departments, and their steady pursuit of their departmental interests, are sure to contribute powerfully to the remedy of this defect in the application of the elective system. Every department is always trying not only to increase the number of courses it offers, but also to prolong

the series of courses which it offers in succession to persevering students. This departmental action tends to extend the instruction offered by the university, and to broaden and enrich the intellectual life of the institution. The advanced students who are attracted to a department which offers a long series of consecutive courses will contribute largely to make the university a place of research as well as of instruction. It is needless to remark that this expansion of advanced teaching is costly; it is worth all it costs.

"Few people seem to understand how long and slow has been the growth of what is now called 'the elective system' in the American colleges and universities. It is eighty-one years since the University of Virginia was opened, with no general curriculum, the students selecting their classes or schools for each year. It is eighty years since the beginnings of what is now the elective system appeared in Harvard College. It is more than sixty years since Francis Wayland published his *Thoughts on the collegiate system of the United States,* a work which led a few years later to the temporary adoption of a voluntary method at Brown University. For the first forty years of this long period the progress in liberty of choice for the student was slow; but for the last forty years it has been rapid, partly because of the great number of new subjects which have forced themselves on the attention of the educated public and the business world, and partly because the resources of the institutions of higher education in the United States have increased during the last half of this period very much more rapidly than they did during the first half.

"In the long discussion of the effects of the elective system disproportionate attention has been given to the effect on the student of the liberty to select his studies from a large number of various courses. The most far-reaching effects of the elective system are its effects on the profession of teaching as a whole, and on national scholarship. Thru the working of the system, the range of studies in the American universities, not for undergraduates only, but for graduates and professors, has been greatly widened. The standards of attainment for both teachers and taught have been much raised; intellectual

efficiency has increased and the expectations and duties of the universities with regard to their own productiveness and influence have been exalted. The academic world of to-day hardly remembers the intellectual poverty of the American college of fifty years ago, when the entire amount of instruction offered by most colleges was the amount which a single student could absorb in four years—most of it being, of course, strictly elementary in quality, as well as thus closely limited in quantity. The titles of some of the older professorships in Harvard College indicate the expectation that one professor could occupy satisfactorily several large fields; thus, the professor on the Alford Foundation, which dates from 1789, was expected to cover natural religion, moral philosophy, and civil polity, and down to 1871 that small part of his time which this one professor could give to civil polity provided all the instruction there was in Harvard University in the subject of economics. The Hollis Professorship of Mathematics and Natural Philosophy was founded in 1727; and no other professorship of mathematics existed in the University for one hundred years, the one Hollis Professor having charge of mathematics and of the entire subject which now goes under the general name of physics. There are still in the United States some colleges where the professors occupy not chairs but settees, as Dr. Oliver Wendell Holmes said of himself when he taught anatomy, physiology, and microscopy; but these settees are fast falling to pieces. The change from a uniform prescribed curriculum, thru which the college undertook to carry on to graduation almost all the young men who entered together in any given year, to a range of studies so wide that no two students need pursue precisely the same course between entrance and graduation, has been very wholesome all over the country in another respect—it has made the college less an administrative machine for turning out an average routine product, and more a living fountain of individual scholarly interest and ambition.

"V. The large and strong universities in America are alike in their general purpose to provide good training for all the professions or intellectual occupations. It was two endowed institutions—Harvard and Yale—that started scientific schools

almost simultaneously in 1846-47; and this purpose characterizes the great endowed institutions to-day quite as strongly as it does the state universities. To this general proposition there is only one important exception: the state universities and many of the endowed institutions give no direct training for the ministry. For law, medicine, teaching, engineering of all sorts, mining, agriculture, manufacturing, the mechanic arts, and business, the American universities, so far as they discern the needs of the country, make the amplest provision which their resources permit. Several of them have lately added architecture to the list of their professional subjects. The training of professional musicians in a large sense has been taken up by a few universities. So soon as forestry was recognized as a needed profession in the United States, several universities began to provide instruction in that great subject. It is obviously the purpose of the American institutions of learning to train young men for all intellectual callings, making no distinction among them as regards their dignity and serviceableness.

"The one exception has been made by the state authorities in the case of the ministry; because the states cannot well admit single denominations to the control of theological instruction in their universities, and until recently undenominational theological instruction has not been recognized as a possibility. Many of the endowed institutions have so dreaded denominational control that they have preferred to omit altogether the department of divinity from their organization. Even institutions expressly created to spread a knowledge of the Gospel and to prepare missionaries and schoolmasters, like Dartmouth College, for example, have omitted to establish a school or department of theology, preferring to send their graduates in search of theological training to special schools, or to other colleges which maintain a department of divinity. In this respect the case of Dartmouth College is particularly interesting, for it maintains a medical school, a school of science and the arts, a school of civil engineering, and a school of administration and finance, but no school of theology.

"The University of California very well illustrates the comprehensive purpose of American universities with regard to pro-

fessional training. In addition to colleges of letters, of social science, and of natural science, it maintains colleges of commerce, agriculture, mechanics, mining, civil engineering, and chemistry, an institute of art, a college of law, a medical department, a dental department, and a college of pharmacy. This purely state university is well matched by Cornell University on the other side of the country, a University governed by a Board of Trustees, and enriched by many private benefactions, but also by the bounty of the United States and the State of New York. This institution comprehends, in addition to the College of Arts and Sciences, a Graduate Department, the College of Law, the Medical College, the New York State Veterinary College, the College of Agriculture, the College of Architecture, the College of Civil Engineering, and the College of Mechanical Engineering and Mechanic Arts. It is clear, therefore, that the American universities intend not only to train men for the professions long called learned, but to 'promote the liberal and practical education of the industrial classes in the several pursuits and professions in life,' to quote the Act of Congress approved July 2d, 1862, granting to the several states public lands for educational purposes. Of course, many American colleges and universities are at present unable to furnish this great variety of professional instruction; but they all wish to do so, and all press that way as fast as possible. It is also true that separate schools have been set up in many parts of the country to train young men for the technical and scientific professions; but in time these schools are likely to be transferred to neighboring universities, or to content themselves with training men for the lower grades of these professions, the universities all over the country being sure to appropriate the training of young men for the higher walks of the scientific professions and of business. The same forces which have carried the separate law schools and medical schools into the universities will carry the technical schools in the same direction, unless indeed these schools accept a lower function, like the training of foremen, draughtsmen, surveyors, assayers, and the like. In respect to this comprehensiveness the American universities differ widely from the English Oxford and Cam-

bridge, in which training for the professions has always had but a small place, unless indeed such preparation as these universities have long given for admission to orders in the Anglican church can by courtesy be called professional training. It is obvious that the policy of the American universities now under consideration has had, and is going to have, a strong effect to uplift the relatively new professions, like those of engineering, applied chemistry, architecture, music, mining, forestry, the public service, transportation, and large-scale manufacturing. These are highly intellectual occupations not yet universally recognized as on a level with divinity, law, and medicine. The American universities will, in a few generations, put them all in their higher grades absolutely on a level with the older callings.

" VI. The American colleges and universities are alike again in their confident expectation of gratitude and support from their graduates; and the American public cordially sympathizes in this expectation on the part of the institutions, and in the grateful and affectionate feelings of the graduates. For example, the public expects its own servants to exhibit a frank affection for the places of their education, and to show partiality for the graduates of their own particular institutions. It rather likes this partiality, as the natural result of youthful friendship and association. Every American institution of higher education counts on services to be rendered to it by its graduates, when they have come to places of influence and power, and esteems the success of its graduates in after life its own best asset, and its surest ground for public confidence and support. The endowed institutions rely on pecuniary support from most of their graduates who prosper in business or in the professions; and this reliance seems to be sound, in proportion to the age and merit of the respective institutions. The older they grow, and the greater their success in teaching and in scientific and literary production, the surer is their reliance on the disposition of the alumni to contribute substantially to the enlargement and improvement of their resources. This is one of the reasons that the American colleges and universities are so eager to train young men for the highest efficiency in all the

professions and other intellectual occupations. Efficiency leads to success in all walks of life; and the success of its graduates is sure to contribute to the prestige and prosperity of any institution of the higher education, and to improve its material resources.

"It is now time to consider briefly some of the differences among the American colleges and universities. It is certain that they have many strong and deep resemblances. What are their differences; and are they as well marked as the resemblances? The resemblances spring from a similar historical development of policies and ideals; the differences are largely external, tho not without importance. Thus, the sites of the American colleges and universities vary greatly in their natural beauty and their artificial surroundings. Some, like Columbia, Pennsylvania, Tulane, and Chicago, have thoroly urban sites, and those unlovely surroundings which are inevitable in the midst of a dense population. Others have suburban sites, capable of presenting some pleasant aspects of trees, shrubs, and flowers, and lying within easy reach of the real country, or public parks and forests. Others again are situated in small towns or villages where they possess considerable estates of their own, and are surrounded by the open country. These small college or university towns sometimes possess great natural beauties, such as hills, lakes, or wooded glens near by, or mountains in the distance, can give; while others have been placed on sites singularly devoid of natural beauty, or of interesting objects in their landscape. These differences of situation undoubtedly affect considerably the sentiments of the students towards their respective colleges, and in some degree the turn of their minds towards natural beauty. One cannot but believe that such a prospect as that which the University of Virginia commands towards the Blue Ridge, or the University of California thru the Golden Gate, must have a life-long effect on the mental habits and outlook of the young men and women who learn to love it. The ideal university ought to have a seat as beautiful as that of the Academy of Athens.

"The American colleges and universities are situated in

very different climates as regards summer heat, winter cold, dryness or dampness, and exposure to malarial influences; and those most favorably situated for the promotion of health and hard work at all seasons of the year will doubtless prove to possess some permanent advantages over those whose situations are less desirable in this respect; but after all the main differences among these institutions as regards situation will in the long run be found to consist in their relative detachment or isolation from large concentrations of population. There will probably always be families or parents who think that young students should be separated from the temptations and distractions of city life, while other equally careful and conscientious people will think that music, the theater, the pleasant activities of polite society, and the artistic interests which cities develop are essential accompaniments of the higher education.

"The colleges differ widely in the use of dormitories, or halls of chambers, for the students. In an institution like Harvard or Yale, where these halls of chambers are numerous and large, the student life differs somewhat from the student life of a university like Michigan, where there are no such buildings; but the fraternity houses, which have become common in most of the American institutions, diminish considerably this difference in college life which results from the use or non-use of dormitories. The social student life in the different institutions is also affected by the homogeneousness, or heterogeneousness of the students. In most of the Eastern institutions the students represent a great variety of family conditions. Some are rich men's sons; and some are poor men's sons; but the majority come from families that are neither rich nor poor. The bread-winners of the families follow an extraordinary variety of occupations. The Eastern colleges in general—particularly those that are urban—have therefore very heterogeneous bodies of students. On the other hand, some of the newer colleges and universities, situated in regions where agriculture is the principal occupation of the people, have remarkably homogeneous bodies of students, the fathers of the students being for the most part independent farmers, mechan-

ics, and professional people who themselves live in the country, and are in moderate circumstances. This agreeable homogeneity tends, of course, to diminish, if strong differences of condition are developed among the population on the natural watershed of the institution, or if the college site, once thoroly rural, becomes citified thru the advent of successful manufactures or of active trade.

"There are certain more subtle differences between the American colleges, which it is easy to feel but hard to describe. Some of them have a characteristic tone, or common sentiment, towards some particular religious organization or institution, as, for instance, towards the Protestant Episcopal, or the Congregational, or the Presbyterian, or the Methodist church; in some there is such an amount of agreement among teachers, graduates, and students on some political dogma, like protection, for example, or bi-metallism, or State rights, as to make rejection of that dogma a real difficulty for any discordant individual. Some exhibit a predominant interest in the applications of science; others maintain a strong interest in literature and history—an interest manifested in a striking degree by former generations of teachers and students at the same place, and also by eminent graduates. Others continue to exhibit an affectionate respect for some ethical or religious movement of former times. There is no doubt that the institutions of the North, the South, the East, and the West, respectively, have somewhat different effects on the manners and bearing of their students, just as these students show slight common differences of voice and speech. These local differences are tolerably persistent, altho there are now many American colleges to which students come from all parts of the country, bringing with them their own local manners, voices, and pronunciations. In spite of these recognizable differences, it is to be observed that the American speech from Canada to the Gulf of Mexico, and from the Atlantic to the Pacific, presents no such strong local variations as little England presents, or as distinguish the North German from the South German.

"There seems to be a considerable difference among the American colleges and universities in regard to charging a tu-

ition fee; but this difference is really not so great or so important as it seems. To be sure, some of the state universities charge no tuition fee, while most of the endowed institutions charge a tuition fee varying from $50 to $200 a year; but it is to be observed, on the one hand, that many of the endowed institutions remit tuition fees with liberality, or possess numerous scholarship funds the income of most of which is sufficient to meet the tuition fee and leave a balance applicable to board or lodging, and on the other, that the state institutions have established the custom of charging various fees for entrance, incidentals, graduation, and laboratory courses. Some of the state universities make a distinction between the college and the school of agriculture and mechanic arts, on the one hand, and the law school and medical school on the other, charging no tuition fee in the first group, but an ample tuition fee in the second. In the state institutions fees for some of the objects just mentioned are invariably collected; and the older the institution the larger these fees are apt to be. Thus, in the University of Michigan the matriculation fee is $10 for a citizen of Michigan, and $25 for a person who comes from any other state or country; the fee for incidental expenses in the Department of Literature, Science, and the Arts is $30 for Michigan students and $40 for all others; and in the Departments of Engineering, Medicine, Law, Pharmacy, and Dentistry this fee is $35 for Michigan students and $45 for all others. Fees are also required from all students who pursue laboratory courses; and in all departments there is a fee of $10 for graduation. The state universities which maintain summer sessions habitually charge a tuition fee for that session. At the University of Michigan this fee is $15 in the Department of Literature, Science, and Arts. In the University of Illinois fees analogous to those of the University of Michigan are charged; and in addition there is a regular tuition fee of $50 a year in the College of Law, and of $120 a year in the College of Medicine. The State of California has been liberal to its university and to its schools, and tuition in the colleges at Berkeley is free to residents of the state; but nonresidents of California are charged a tuition fee of $20 a year,

and there is the usual charge for laboratory supplies, this charge amounting to from $5 to $30 a year. The Law School has a fee of $10 a year for incidental expenses, and the Medical Department has a tuition fee of $150 a year, beside a matriculation fee, a graduation fee, and large fees for dissecting material, the rental of microscopes, and laboratory breakage. When we consider, further, that the tuition fee, even where it is large, is seldom more than one-third of the total cost of remaining one year in college, and that foregoing the productive labor of the boy is the real difficulty to be met by a poor family in sending a boy to college, we shall perceive that the varying amounts of the annual fees charged for tuition do not present a very serious difference among the American institutions of the higher education. Moreover, the tendency in the state institutions is to enlarge their annual fees under various names; and in the endowed institutions the tendency is to provide more and more scholarships and other aids for poor students, and to offer to competent undergraduates who need to support themselves during their college life better and better opportunities for earning money. Such opportunities are, of course, more easily procured in colleges situated in or near large cities. There they are so abundant that hundreds of young men go thru these colleges chiefly on resources which they themselves earn, and graduate without having incurred debt. It is hard to do as much in an institution situated in a village or small town, even tho no tuition fee be demanded of the student.

"The American colleges and universities differ among themselves considerably in regard to admitting women to common residence and equal standing with men; but here again the differences are not as great as they at first sight appear to be, and they are diminishing. One may say, in a general way, that the leading Eastern institutions are not coeducational, and that the leading Western institutions are coeducational; but many of the Eastern institutions, even those considered most conservative, are partially open to women, and others have entered into more or less intimate association with separate colleges for women placed in the same town or city. Among Western

endowed institutions there are several that have ceased to be thoroly coeducational and have decided to segregate the women apart from the men. Leland Stanford Junior University, one of the newest and now one of the richest of American universities, has given notice that it will not under any circumstances admit more than a specified number of women. In the Eastern part of the country the wholly separate college for women thrives, and gives evidence of present strength and increasing vitality. The probability is that, with the growth of educational resources and the increasing heterogeneousness of the population in the newer parts of our country, the practices of the West will be assimilated to those of the East in regard to the education of young women with young men—that is, some institutions will remain frankly and thruout coeducational while others will detach the groups of women more or less from the groups of men, and others again will be coeducational in their Graduate Schools and Summer Sessions, but not elsewhere. Moreover, both separate colleges for women and colleges for women affiliated with universities for men will probably arise in the West.

"A significant distinction among American colleges is based on their terms of admission, some requiring examinations but the great majority admitting on certificates from secondary schools. Almost all the colleges use each method in some measure; but there is an important group of Eastern colleges which admit regular students only on examination. Both methods have been improved and extended in recent years; so that there is now a good chance to test fairly the relative merits of the two methods. That method will ultimately be preferred by schools and colleges alike which delivers to the colleges the ablest, best trained, most ambitious, and most efficient boys and girls. Between the two groups of colleges the decisive test will be the success of their graduates in after life. The differentiation among colleges on this basis may turn out to be quicker and more decisive than most experts have imagined, or on the other hand the results may be obscure and hard to demonstrate. Again, a third method, like that of Germany, may supersede both of the existing methods.

"Another distinction among the leading universities of this country depends on the proportion which the work they do for undergraduates bears to the work they do for young men who already hold a bachelor's degree. The graduate schools in Arts and Sciences are increasing rapidly in number and in size; but the number of universities which require a bachelor's degree for admission to their other professional schools is still very small. Here again a sound experiment is in progress under fair conditions, and in ten years more it may be possible for judicious observers to determine what the interest of the universities is in this matter, and what the interest of the community. At any rate, it is certain that preparation for the professions is growing more and more elaborate, and that the influence of the professions steadily increases.

"There is an important difference in the organization and management of the American institutions of higher education which has not attracted much public attention, but which really affects strongly the present management of these institutions and their future prospects. In many of the institutions, particularly the older and stronger ones, the president of the college or university is a member of the governing board, or boards, with the full powers of a member. In others, the board of trustees or regents elects its own chairman; and the president of the university, tho invited to attend the meetings of the board, is not a member thereof, much less its head. The position of the president who is a member of the governing boards is, of course, stronger than that of a president who is not, provided that his personal quality and his experience are such as to give him influence with the boards. A board of trustees which invites the presence of the president who is not a member by right is inclined to look on the president as one of its numerous employees, with whose service they can dispense, if they like, as they would with the services of a professor, instructor, or secretary. Such a relation to the governing board impairs the dignity and stability of a presidency, and therefore the influence of the incumbent. This is not a local or sectional difference in American universities. Some of the newer endowed institutions in the East have a president who is not a

member of the governing board, while some of the state universities of the West have made the president invariably a full member of the board of regents. As the American institutions have grown, the function of the president has become more and more important to their prosperity and progress. In early times the president was the principal teacher. Down to the early part of the nineteenth century he was almost invariably a minister. In most of the larger institutions the president no longer teaches, and in many he is a layman. Common experience during the last fifty years teaches with certainty that the efficiency of any corporation—financial, manufacturing, or commercial—depends on its having one responsible head who has knowledge of all its concerns, and gives guidance and inspiration in all its principal activities. A university corporation cannot be an exception to this rule for securing efficiency. Again, the experience of the last fifty years teaches clearly that in all fields of human activity it is the trained expert who must invent and give direction. The president of a university must be either an expert himself in educational administration, or he must be a man who thoroly understands how to utilize expert service. And thirdly, experience proves that long service gives accumulating value to well-selected officials; so that universities which give their presidents an honorable tenure, and get from them long service, will be likely to win great advantages over those which do not.

"The American universities are obviously divisible into two groups, the endowed and the state-supported, altho the endowed may sometimes receive aid from government, and the state-supported may possess some endowments. This difference in respect to the sources of their income, however, affects the policies and tendencies of the two groups much less than might be imagined. At present the leading endowed institutions are richer, and have larger annual budgets, than the leading state-supported institutions, but, of course, this comparative condition may any year be reversed. It would be hard to prove that any important difference in discipline, educational policy, or scholarly ambition and aim, corresponds with or accompanies this division by sources of income. On the whole,

the policies and aims of the two groups are extraordinarily similar. The division is not a strict geographical one. Most of the strong state universities are west of the Alleghenies, but in that vast region strong endowed institutions have also arisen, while in the South both groups exist side by side. California supports the state university of largest annual budget, and is also the seat of one of the richest of American endowed universities. The state universities are all young—Michigan not yet seventy years old, Wisconsin not yet sixty, and Illinois, Minnesota, and California not yet forty. Their future is very bright; but not brighter than that of the leading endowed institutions. The two sorts of university will both serve the country greatly, maintaining a fine rivalry in scholarship and in serviceableness, making common cause in promoting national intelligence, righteousness, and efficiency, and illustrating the best results of the American passion for education. If, then, the American colleges and universities are strikingly similar, in spite of local and unessential differences, it is because they express and illustrate the fundamental convictions, beliefs, and aspirations of the American people."

CHARLES W. ELIOT

HARVARD UNIVERSITY

II

THE EXCESSIVE EXPANSION OF THE COURSE OF STUDY IN AMERICAN UNIVERSITIES

I wish to consider briefly what I believe to be a certain evil condition of the courses of study in American universities. I believe that we offer too wide a range of undergraduate courses, and that this is done at the expense on the one hand of the quality of our collegiate work, and on the other hand at the expense of graduate and research work. I believe that without violent change the evil may be in a considerable measure remedied.

The chief factor in determining from decade to decade the actual course of study in American universities has been, as I think, the pressure of new subjects for recognition. This pressure changed the curriculum of seventy-five years ago with its slender list of subjects into the curriculum of forty and twenty-five years ago, whose aim was to compress a bit of each sort of learning into a four years' course. When this became impossible, two courses of study were made and then three. The ground must be covered. No one student could cover the ground, but the catalog must do so.

The same pressure, growing always greater, caused the so-called all-round course of study to blow up from within, leaving its débris in many new and strange forms of educational practice. It has happened more than once that the old course of study has blown up in the hands of a faculty whose members believed in its ideal and who were simply trying to re-arrange the details.

Finally, the same pressure which has caused the multiplication of departments has caused the multiplication of specialties within departments. Science has developed such and such new fields of learning. They demand recognition. They are recognized at such and such institutions. We must recog-

nize them here. We must cover the ground. No student can cover the ground, but the university must do so.

If a university were rich enough to cover the whole ground of learning with first-rate introductory courses on the freshman-sophomore level, and then to cover the whole ground again on the junior-senior level with a vast array of electives, and finally to support research in a correspondingly adequate measure, we might say let it be so; let this limitlessly rich university do by itself what it is really the business of all the universities and learned societies combined to do. It is fine to imagine an institution where every science and every art might be studied upon every level, with no lack of money or of men, or of leisure for the men who do productive work. It is not surprising that this splendid conception, which must be the ideal of the university world as a whole, should be more or less consciously the ideal of particular universities. But in point of fact, the whole university world is not at present rich enough for the full realization of this ideal. And when a single university, even the richest, attempts to do everything on every level, the inevitable failure of the undertaking is sure to appear in some way.

The failure does appear very generally in two well-known ways—first, in the cheapening of the elementary collegiate work; and second, in the restriction of productive research work. It is said that in the American university there is a necessary internal conflict between the collegiate interests and the university interests. My judgment is that in the larger American universities generally, the greatest enemy of both these interests is the excessive expansion of the course of study.

There are obviously two ways of cutting down the amount of work which the university shall offer. We may cut down the number of departments or we may cut down the number of courses offered by the several departments.

The first of these methods is radical. It is a grave matter to abolish a university department. Not really more grave, I think, than the establishment of a new department whose justification may be doubtful, but for many and obvious reasons a procedure which university authorities must hesitate to adopt. Nevertheless, even such radical pruning may be justified. It

can become a question between cutting off some large limbs and the languishing of the whole tree. I shall not be surprised if within the next generation the pressure of circumstances should force the universities to the adoption in a considerable degree of this extreme form of selection.

Meanwhile, we have at hand a much gentler and yet scarcely less efficient method of selection if the departments will cut down the amount and range of work offered by them. Let me put this method of reorganizing and concentrating the course of study in the form of definite proposals.

Let there be in each principal university department: 1. A fundamental elementary course. 2. A very strictly limited amount of undergraduate work beyond the introductory course. 3. All the rest of the work offered by the department strictly graduate or research work.

1. *The fundamental course*—It should be a problem of maximum importance to make this course as good as college work can be made. There is the problem of determining what to do,—what things out of the whole field to select which shall represent typically the present state of learning in the field and that on a level appropriate for the younger college students. There is the problem of finding men whose training and whose personal good temper and whose educational tact fit them to introduce young people to a great department of learning. Wherever possible, the head of the department should take part in this work.

It is in this work, as we know, that the small colleges have the chief advantage of their smallness and where they have the best chance of doing better work than the great university can do. I believe, however, that the university has great countervailing advantages. Above all things, it must have, on the average, professors who are stronger and in closer touch with the most recent learning. I believe, therefore, that in spite of the great numbers and the many sections, it is possible for the university to develop elementary courses which shall be better than are ordinarily possible in the small college. I wish to remark here that to plan and achieve such a course is of itself productive original work of a high order, as truly as the writing of a monograph.

2. *The advanced undergraduate courses*—Most of our universities have either the major subject system or the group system. The object of both these systems, as we know, is to furnish, in lieu of the old-time college curriculum, a number of curricula each of which has a substantial center. The essential requirement which we must make of every group and of every major is that a competent social consensus shall judge it to have the real internal unity together with the progressive grades of difficulty which fit it to be the center of a college curriculum. Both systems exclude a college course made up of scraps. Both may, and I think should, admit a major or a group whose internal unity is assured by the fact that it leads to one of the learned occupations.

What I wish now to urge is that, without affecting the number of majors or of groups or of departments, we may very decidedly reduce the number of undergraduate courses offered. Here, as I think, is the place for the pruning knife. The universities can cover the whole field of learning in typical introductory courses on the freshman-sophomore level. We cannot each of us by any possibility cover the ground on all higher levels. We must select. We must reject right and left subjects which have every argument in their favor except that we cannot do them all. We must weed out the suckers as a condition of having cornstalks.

There would result apparent hardships for the undergraduate and for some members of the faculty. The undergraduate would not be able, on the one hand, to take a large proportion of his college course within one narrow field, thus becoming a specialist without becoming an educated man; and he would not be able, on the other hand, to browse far and wide over any and every field which modern learning has developed. He would find instead, however, an abundantly wide choice of majors or of groups each offering an austerely chosen list of representative courses so arranged as to make a substantial center for a college course. And this, whether or not he is to become a specialist, is, I believe, the best thing which the university of to-day can offer him.

I have considered in this connection also the possible hardship to the younger professors who want to have each at least

a small amount of advanced work to do. I do not wish to slight this consideration, for it is an essential feature of the university life that the younger men should have the door of hope open. I have not solved this problem to my own satisfaction, but I say this: If an instructor can do important productive work, the university should try to offer him as much leisure as the value of his work appears to warrant, whether he is doing the work with students or alone. What the university cannot afford to do is to pay so dearly for elementary non-productive junior and senior work. These courses are the suckers.[1]

3. *Productive work*—The freshman-sophomore fundamental courses should be the first gainers from the resources of money and leisure saved by cutting off excessive expansion. The second gainers should be the graduate and research courses. I wish to consider this second gain as it might affect the larger universities and then as it might affect the smaller ones.

1. Our greatest universities are very rich. They have great graduate schools. They have scholars who have proved to be productive men. And yet, when the total output of scholarly work done in them is compared with that done in Germany, for example, the result is generally conceded to be discouraging. In many cases, little is accomplished beyond the comparatively elementary research work which has its terminus in the doctor's degree. No explanation of this result seems so probable as the fact that the German professor has as a rule the leisure which the American professor only secures by exception. It is doubtful whether the German rule can or should become the American one while we have the college and the university united in one institution. We wish our greatest scholar to surrender a little of his time to the freshmen. But having asked this of him as a duty of religion,

[1] It should, of course, be remembered that conditions vary widely in the different departments. For example, first-year work in a foreign language is not really collegiate work at all, and if it must be done in college, the amount of possible collegiate work in the subject is lessened. On the other hand, such a subject as astronomy or geology presupposes collegiate work in other sciences. Good sense requires that such differences should be recognized, at whatever expense of superficial consistency in the treatment of departments.

we should spare his leisure as the most precious asset of the university. We should count it a sin to require such a man to "cover the ground." We should sacrifice the catalog, make it thin and full of holes, confine the students to a narrow range of typically good choices, and by these inconsequential sacrifices preserve for the great man his chance to do the work which he alone can do.

2. There is an evil suggestion in the air that a university should not attempt to do advanced graduate and research work unless it is very rich. I know of nothing to justify such a counsel of discouragment. The history of learning, the history of the little universities of Europe, the current history of scholarly work in America all show that the conditions which permit a man to do productive work may be created anywhere. At the worst, some men in the smaller universities, in the little colleges, and in whatever places may seem more unlikely, will continue to prove that creative work is free for all and is the one thing which can never be controlled by a monopoly. Wherever these men are they prove also, directly thru their pupils or indirectly thru their colleagues, the vitalizing effect of research upon teaching and so demonstrate the true bond of unity between the university and the college. No institutional conditions can wholly suppress these masters of the guild of scholars. It is, however, our main business to organize conditions which shall not tend to repress them but which shall enable them to give their whole services to society.

In conclusion I will say that the problem of selecting from all the things which might be done the things which shall be done is the most difficult and the most imperative problem confronting the entire school system. It is not an artificial problem. The school must represent civilization. When we have detected and dismissed the fads and frills there remains the great circle of sciences and arts which will not suffer dismissal, and yet for which our long and expensive school system has not yet found enough money nor enough time. This means simply that the school has forced upon it as never before the problem of selecting its course of study.

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III

SPECIAL STATE AID TO HIGH SCHOOLS

Altho the high school is of very recent development, it is so thoroly accepted as an established part of the public school system that it is almost incredible that forty years ago it was argued by many to be undemocratic, un-American, and unconstitutional to support high schools at public expense. So slowly did this opinion disappear that from 1821, when the first high school was established in Boston, to 1860 only forty free high schools had been established in the whole United States. It was argued that it was the duty of the state only to maintain elementary schools at public expense, and that those who desired the benefits of higher education ought to pay for it privately. This attitude accounts in a large measure for the very general establishment of private academies and private colleges. Similar arguments concerning the support of state universities and normal schools were prevalent.

At the present time, however, it is a thoroly established belief that the state must provide education for all of its future citizens and to any extent which they desire. The graduate college has come to be as definitely recognized as a legitimate part of public education as the primary school. In fact, the importance of graduate work as an incentive to those in lower grades is so thoroly recognized that in many states large stipends in the way of graduate scholarships and fellowships are provided for those who persevere to that point. The principle, well established in educational history, that all great educational movements start at the top and permeate downwards is acted upon in practice even if unknown in theory. To provide great teachers in the large sense of the term is the first step in developing a high educational status. Communities which at first regarded the high school as a trespasser upon elementary school funds have come now to

regard the high school as the greatest uplifting agent in the community. They would no more think of lopping off the high school than of cutting off the first grade.

A comparatively new question has appeared upon the horizon with reference to the support of public high schools. It has been found that many communities with small property valuation, tho struggling heroically, have found it difficult to maintain all grades of a public school including the high school. As universal education for all has come to be regarded as absolutely necessary for the protection and preservation of the state, it has been asked why the state should not assist the small communities in providing as adequate public school facilities as the larger cities may easily provide because of their great aggregation of wealth. In short, is it not as much a legitimate function of the state to assist high schools by a direct bonus as it is to assist its normal schools and universities by special taxes and special appropriations? Several states have answered this in the affirmative by appropriating state money according to various plans for the maintenance of high schools.

Massachusetts was the first state to adopt the important policy of establishing high schools. The first one was established within its borders in 1821, and in 1826 it was made a matter of state policy to provide public high schools. At that time a law was passed requiring towns of over five hundred families to support a high school, but exempting towns of less than five hundred families. It might be said in passing that this was merely a modification of the law established by the "General Court" in 1647 which made it obligatory for towns of less than five hundred householders to maintain a school where children could learn to read and write, and towns having one hundred families or householders were required to set up a grammar school, "ye master thereof being able to instruct youth as farr as they may be fitted for ye university, provided that if any town neglect ye performance hereof above one yeare that every such town shall pay five pounds to ye next schoole." The above law remained the essential one concerning schools in Massachusetts for nearly 150 years. In 1891

the state ordered that every town without a high school of its own should pay for the tuition of all its properly qualified children in the high school of any other town or city and, should it see fit, should pay for their conveyance also. In 1895 another step was taken. A law was passed to the effect that towns having a valuation of less than $500,000 each and without high schools of their own might send their pupils to other high schools approved by the state board of education and then be reimbursed by the state for the actual amount of tuition thus expended. In 1902 the law was amended so as to extend its policy of state aid to high schools in smaller towns. The essence of the law is to the effect that any towns of less than five hundred families, and having a valuation of less than $750,000, are entitled to receive from the treasury of the commonwealth all necessary amounts actually expended for the maintenance of pupils in approved high schools. Towns whose valuation exceeds $750,000, but whose number of families is less than five hundred, are entitled to receive from the treasury of the commonwealth half of all necessary amounts actually expended for high school tuition in approved high schools. Towns of less than five hundred families, maintaining a high school of their own and whose courses and equipment are approved by the state board of education and employing at least two teachers, are entitled to receive annually from the state treasury $300 for the support of said high school. Towns of less than five hundred families, maintaining a high school with only one teacher, are not entitled to any state aid. The inference is that state aid is offered as an inducement to employ more than one teacher. In the state there are 185 towns having less than five hundred families. Eighty-nine have a valuation of less than $750,000 and are without high schools of their own and are consequently entitled to the actual amount expended for tuition in approved high schools. There are eighteen with more than $750,000 valuation without high schools which are therefore entitled to state reimbursement for one-half of the tuition expended in approved schools. Thirty-three towns maintain high schools with two or more teachers and consequently receive

$300 each. There are twenty-four towns with less than five hundred families, but being assessed at more than $750,000, are consequently not entitled to state aid. The remaining twenty-one towns, having less than five hundred families but with a valuation of less than $750,000, maintain a high school but employ only one teacher, and are consequently not entitled to an allowance from the state. The state requires that before being approved they shall be adequately equipped and taught by a principal and assistants of competent ability and good morals. It requires the school to give instruction in such subjects as the school committee consider expedient to be taught in the high school and in such additional subjects as may be required for the general purposes of training and culture as well as for the purpose of preparing pupils for admission to state normal schools, technical schools, and colleges. One or more courses must be at least four years in length. The school must be kept open for the benefit of all the inhabitants of the city or town for at least forty weeks exclusive of vacations. Any town which does not maintain the school for at least thirty-six weeks exclusive of vacations is liable to have its share of the income withheld.

As early as 1873 Maine established a system of free secondary schools. Under the provisions of the law of 1873, any town raising an expense fund for high schools was reimbursed to the extent of one-half the amount paid for teachers' wages and board, provided that no town was paid more than $500. In 1875 there were organized 157 such schools in the 421 towns. In 1879 the legislature passed an act suspending the operation of the law for one year. In 1880 the legislature provided that instruction in the ancient and modern languages should not be given in any school aided by the state except in such schools as formed a part of a graded system. At that time the amount directly paid was reduced to $250. Subsequent changes were made to provide for the free tuition of pupils residing in towns or districts not maintaining high schools. Since 1875 the growth of the system has been such that the number of towns in which free high schools are maintained has been increased from 157 to 256 in 1898. The ad-

vance in the grade of scholarship required for entrance reduced the number to 220 in 1899 and to 214 in 1900. "The act establishing high schools in 1873," writes the State Superintendent, "was a death blow to all but the stronger of the old academies. Many of them transferred their buildings and funds to the towns in which they were located and became free high schools. In 1891 the legislature granted fourteeen academies an annual appropriation of $500 each for ten years; two, $800 each for ten years; and one, $300 for ten years. The legislature of 1899 made an appropriation for quite a large number of academies." At the present time the academies receive generally $500, but in special cases for maintaining additional courses, receiving a larger number of non-resident pupils, they may receive $750, or even $1000 in case they maintain an English course, a college preparatory course, and a training course for teachers, and have the requisite attendance. Pupils residing in districts not maintaining high schools shall have their tuition paid by their own district and the district in turn is reimbursed by the state for one-half of the amount paid out, not to exceed $250.

Wisconsin maintains what are known as free high schools. That is, they are graded schools maintaining a high school course of study and complying with other state regulations. These provide that there must be at least twenty-five pupils of a high school grade in order to establish the school; it can only be established by vote of the district and upon application to the state superintendent and after inspection and approval by that official; and it must maintain the state course of study. It is provided that not more than two free high schools may be established in one town, village, or city. Two or more towns may unite for the purpose of securing this advantage. The purpose of the original law giving state aid to high schools in Wisconsin was to encourage the development of township or rural high schools. But as few took advantage of it, the second class of high school districts in towns and villages received the major portion of the appropriation.

Approved schools are entitled to receive from the general fund of the state, annually, one-half the amount actually ex-

pended for instruction therein. No school may receive more than $500. The total amount appropriated is $100,000 annually. If this is insufficient to pay the full amount to all they each receive a proportionate amount. Large schools, of course, never receive one-half of the total sum paid for instruction, but some of the smaller ones do.

The course of study laid down by the state superintendent must be followed, or if deviations are made, such changes must be clearly approved by him. They are at all times subject to inspection and a state inspector is employed for the purpose. All free high schools must maintain one course termed the "English Course"; that is, a course without foreign languages. Most free high schools provide foreign languages, but they are not compulsory. In addition, "each free high school shall offer at least a twelve weeks' course of instruction each year in the theory and art of teaching; in the organization, management, and course of study of ungraded schools; and in the duties of citizens in the organization and administration of local school systems. Such a course of instruction shall be open to all students," and a satisfactory standing must be secured by students who desire to have their high school diplomas countersigned by county superintendents, after one year's teaching upon a first-grade certificate, for validation as a five-year state certificate.

All free high schools in Wisconsin are obliged to admit properly qualified pupils from other districts, not possessing a free high school, provided the facilities of the school will warrant it.

A regulation of vastly more importance than that pertaining to courses of study, however, is that which requires the school to be taught by teachers of superior qualifications. Every teacher must be a graduate of some university, college, or normal school; hold a state certificate (the examination for which is very rigid), or pass an examination upon the branches taught. These last two forms of licenses can only be gained after a certain amount of experience in teaching. The principal of a four-year course high school must possess a life certificate or its equivalent. The diploma from the elementary

courses of the normal schools or the five-year state certificate will not qualify their holder to assume such a responsible position as the principalship of a better class high school. All teachers in the free high schools must be similarly certified.

Wisconsin has recently taken another important step in providing a bonus for the graded schools in order to induce them to raise their standards and increase their efficiency. In 1901 a law was enacted apportioning $300 to graded schools of the first class and $100 to graded schools of the second class. A first-class school is required to maintain three or more departments and a second-class school must have two departments. In each case school must be in session nine months each year and the average daily attendance must be at least fifteen in each department. The school buildings and all property must be in approved condition. Ample equipment, including globes, maps, blackboards, library, and other essentials for the proper work of the school, must be provided by the district. The law gives abundant evidence of being drafted by an expert in school matters instead of by the average legislator entirely lacking in pedagogical training. The law is, in fact, one of the many splendid monuments to the wisdom and foresight of Dr. L. D. Harvey, then state superintendent of public instruction. During his four years in the office of state superintendent some of the most important school legislation that ever was placed on the statute books of any state was enacted. Special importance is to be attached to the provision requiring that every principal of a state graded school of the first class be the holder of some form of state certificate. The principal of a school of the second class must possess a state certificate or a first-grade county certificate. This last form implies experience; the former, extended training. Not more than one assistant may possess so low a grade of certificate as a third grade, and this only when accompanied by evidence of one year's experience. Only one may have a second-grade certificate. All others must have a first-grade county certificate or a state certificate. This plan reasonably assures at least a modicum of scholarship and professional

training and absolutely obviates placing the schools in charge of beginners.

Wisconsin, under the leadership of Superintendent Harvey, became a pioneer state in the encouragement of the introduction of manual training in the public schools. Superintendent Harvey believed that manual training should rank with any of the subjects taught in the secondary schools of the state, and in order to encourage its introduction secured the passage of a law appropriating the sum of $250 yearly to each school maintaining a satisfactory manual training department during at least six months of the year. The law was made so comprehensive as to include domestic science as a regular part of the manual training work. Provision was made that all teachers of manual training and domestic science in the high schools should possess a special state certificate qualifying them for such work. The sum of $2500 was at first set apart. This was later made $5000 and the number of schools limited to twenty. Eight schools immediately took advantage of the aid and during the year 1903-04 fifteen schools took advantage of the opportunity. These fifteen schools were at Appleton, Chippewa Falls, Bayfield, Eau Claire, Fond du Lac, Grand Rapids, Janesville, Marinette, Mayville, Menomonie, Oconomowoc, Racine, Superior, Wausau, Washburn. Concerning these provisions of state aid for graded schools, Superintendent Cary writes that the smaller schools have been given encouragement "and the subject of manual training has seemed to take a new lease of life." Superintendent Cary believes, however, that a special manual training school is not desirable. He writes that "the trend of opinion as shown in the courses of study recently adopted in such schools indicates that manual training is settling back into its legitimate place in the educational system. Special courses except in larger cities having the trade element prominent are giving place to courses of study in which manual training is required for all students in all courses. The trend of events indicates that manual training is coming to occupy a relatively less important place in high schools and on the other hand is extending thruout the grades below."

Two other classes of schools which should be regarded as secondary schools, altho not specifically given that title, are beneficiaries of special state appropriations for their maintenance. The first are county schools of agriculture and domestic economy, and the second are normal training schools for county teachers. Any county establishing a county school of agriculture and domestic economy according to the legal provisions, and receiving approval by the state superintendent and the dean of the college of agriculture of the state university, may be placed upon an approved list. All approved schools, after due inspection, receive a sum equal to two-thirds of the amount actually expended for maintaining such a school during the year. It is provided that the total amount so apportioned shall not exceed $4000 to any one school in any one year. The county is to provide the school and for one-third of its yearly expenses. Two counties may co-operate in providing such schools. At the present time two such schools are in operation; one at Menomonie, Dunn County, and the other at Wausau, Marathon County. State Superintendent Cary writes in his report of 1904: "Provision was made by the last legislature for the establishment of another of these schools and an effort was made by several counties to have the county boards pass favorable resolutions for the establishment of the school in accordance with these provisions, but the resolutions failed to carry by a small margin. Strong effort was especially made in Jefferson County under the leadership of ex-Governor W. D. Hoard. Without doubt more of these schools will be established in the near future." He further writes that "perhaps no school that has been established recently has a much brighter outlook than the county school of agriculture and domestic economy. . . . Both schools have had an excellent influence, especially upon the counties where they are established." Principal K. C. Davis of the Menomonie school in his report writes very encouragingly concerning the work. He says, "Farmers' meetings have been held in all parts of the county during the year, and thru these meetings and the efforts of the directors farmers' clubs have been organized. We believe the school is making

itself felt thruout the county and are in hearty sympathy with the work being done. Farmers now realize the benefit they can derive thru the school and as a result the members of the faculty are continually solicited for advice. In this way, and thru the influence of the students sent out from the school, the farmers and the school are becoming closely united."

The second class of schools, the county training school for teachers, was first established in 1899. Under the provisions of the law, the county board of any county in which there is no normal school located is empowered to appropriate money for the organization, equipment, and maintenance of a county training school for teachers of the common schools. The schools are to be under the general supervision of the state superintendent and are to be free to the teachers of the county in which they are located; non-residents are required to pay a tuition. The schools must give instruction in the common branches and in the professional branches specially related to teaching. This plainly places them in the category of secondary schools. It will be remembered that all of the free high schools in Wisconsin give some instruction in the theory and art of teaching. All such schools approved by the state superintendent are awarded a sum equal to one-half of the total cost of the maintenance of the school, such appropriation not being allowed to exceed $2500 in any one school year. Down to the present time, seven such schools have been put into active operation. All of the schools thus far established have been organized in connection with the best high school in the county. They occupy a part of the same building and the schools in the city are glad to have the joint organization. It brings to the school a desirable class of persons and frequently they take other work in the high school. This plan also enables the county to organize a school without going to the expense of providing a building and separate organization. In nearly all cases the schools utilize the entire sum made possible. In some cases a little less has been necessary to maintain the school. State Superintendent Cary writes among many other very interesting things concerning these schools that, "the principals and assistants of these

schools are men and women whose experience and training have been such as to fit them exactly for teaching students how to teach in rural schools. Some of the young people who attend the county training schools are graduates of the high schools, while others are graduates of country schools. A year of special training both in the academic and professional branches that they are to teach in the country does much in fitting them for their work. Several of the schools have been in operation long enough to settle beyond doubt the question of their value. In all cases they are receiving the hearty support of the communities in which they are established."

Minnesota has a splendid system of graded schools. The system has to a large extent been developed to its present enviable status thru the generous special state aid extended to the schools for maintaining definite standards. For the purpose of apportioning the state aid their graded schools are divided into four classes, namely: state high schools, state graded schools, state semi-graded schools, and state rural schools. Under this wise provision, any public graded school in any city or incorporated village, or any township graded school complying with the legal provisions is entitled to become a state high school. In order to be eligible to receive state aid it shall have maintained school for nine months during the year preceding. It is also obliged to admit students of either sex from any part of the state without charge for tuition, provided such non-residents pass a satisfactory examination in all the common school branches usually completed in the eighth grade. It must maintain a course of study embracing all branches prescribed by the state high school board for admission to the collegiate department of the University of Minnesota. All schools complying with the above regulations and found worthy upon inspection, are entitled to receive $1500 from the state treasury. Any public school in any town or village or any township graded school in the state not entitled to aid as a state high school but having at least four departments in charge of a principal and teachers possessing qualifications as required by the state high school board, and complying with all other regulations with regard to

buildings and courses of study, may be known as a state graded school and is entitled to $400 per year from the state fund. Any school having two teachers one of whom shall possess a first-grade certificate, a diploma from a normal school or from a university, or a state certificate, and complying with other regulations with reference to buildings and courses of study, may be designated as a semi-graded school and is thereby entitled to receive $200 per year. All other teachers in the school must possess at least a second-grade county certificate. Any rural school maintaining school for at least eight months during the preceding year and taught by a teacher holding a first-grade certificate, or a higher grade of certificate, is entitled to receive the sum of $100 per year. Pursuant to the law of 1901 the state appropriated $115,000 for the state high schools; $52,000 for state graded schools; $25,000 to semi-graded schools, and $60,000 for the aid of state rural schools. As a further stimulus in promoting a high grade of instruction, the state of Minnesota in 1895 set apart $10,000 annually for the purpose of giving encouragement in the special teaching of common branches to prospective teachers. The law provided that any state high school having a four years' course and classes doing work in each of the four grades of the school and further offering special instruction to intending teachers in the common school branches,—reading, writing, geography, arithmetic, English grammar, United States history, civil government,—should receive annually, upon certification of the high school board, the sum of $750 for the furtherance of this work.

California provides for state aid to the extent of $15 per pupil in average daily attendance in all duly established high schools. Up to 1906 instead of the $15 per pupil, they levy a state tax of one and one-half cents per $100 upon all taxable property of the state for the special support of high schools. In order to insure each school receiving a share of the amount, it is provided that two-thirds of the apportionment shall be distributed equally among the high schools irrespective of the number of pupils enrolled or in average attendance. The remaining one-third is distributed upon the basis of average

daily attendance. State Superintendent Kirk writes in highly commendatory terms concerning the workings of the law. He says, "I think it safe to say that no school law of recent years has been more highly appreciated than this. It has helped struggling country schools where some of the very best secondary school work is being done. As in the case of certain elementary schools, some high schools have been given aid when they could have gotten along without it. . . . Rapid strides have been taken in the interest of secondary education within the past two years."

Connecticut provides that towns not maintaining a high school shall pay the tuition fee and the transportation fee, if necessary, of pupils who attend approved high schools in other places. The state reimburses each town to the extent of two-thirds of the tuition or transportation fee so paid. While not giving a definite bonus to districts maintaining high schools, they provide that the state shall pay $10 to every school district and to every town maintaining a high school for the purpose of establishing a library, provided the district will raise an equal amount. Five dollars per year are given thereafter to each library, provided the district raises an equal amount. In schools exceeding one hundred pupils, an additional initial ten dollars and five dollars annually are paid for each fractional part of one hundred scholars in excess of the first one hundred. In 1902 over $5000 were thus expended for libraries. The state also granted a large number of books.

Florida provided for definite state aid to three classes of graded schools. Any high school maintaining four years of high school work as prescribed by the state board is entitled to $600 per annum for three years. High schools maintaining only the first two years of a high school course receive $360 per annum for three years. Rural graded schools not less than three miles distant from any town or city of more than five hundred inhabitants, providing instruction in the intermediate and grammar grades during eight months of the year and conducted by two or more qualified teachers in buildings with suitable equipment, shall receive $200 per annum

for four years. In all probability these amounts will be again appropriated, if the plan is successful.

State Superintendent Jas. B. Aswell of Louisiana recommends an appropriation for the high schools of Louisana in towns of not less than three thousand inhabitants.

Michigan does not provide state aid for high schools but does grant state aid for county normal schools, which, as I have maintained, are really secondary schools. The law of 1903 made it possible for any school district in Michigan to establish one county training class in each county, not more than ten in the whole state in one year, and provided that the sum of $1000 annually should be paid to such districts. The district is to provide buildings, a pedagogical library, apparatus and equipment, and must maintain classes at least thirty-two weeks each year.

The Maryland law makes it mandatory for the state to appropriate the sum of $10 yearly for the purchase of district libraries in any district which will raise a like amount. As in Wisconsin, Maryland makes a special state appropriation for the encouragement of manual training. For every manual training school or manual training department established according to law and approved by the state department, the sum of $1500 is provided annually for its support. The intent of the law is to support by state aid only one such school in each county for whites and one for colored students. All schools seeking such aid must show a record of an average daily attendance of at least thirty pupils in order to receive the full amount. For each pupil in average daily attendance $50 are appropriated in case there are fewer than thirty.

Montana provides that pupils residing in a school district not maintaining a high school may attend a nearby high school and have their tuition paid from their own district.

Mississippi has a law similar to that of Montana but makes it more far-reaching by stating that "Educable children may attend the high school or college in their county. If they pursue studies beyond the public high school curriculum, they may be required to pay tuition."

State Superintendent Carrington of Missouri wrote me:

"The bill providing for state aid to high schools failed to pass at the last session of the general assembly, and hence we have no law on that subject.

"Regretting that I cannot write you more encouragingly on the subject, but hoping the future will bring better results, I am, etc." This is quoted entire to show the attitude of the thinkers on the question.

North Dakota has made provision for definite state aid by appropriating the sum of $400 annually for each high school maintaining a four-year high school course and doing four years of high school work; $300 to each school offering and maintaining three years of high school work; $200 to each school with two years of high school work. It is provided that not more than $10,000 annually may be spent for this purpose and as a consequence the full amount has so far not been awarded to each of the schools maintaining approved courses. During the year 1903 it was possible to give the three classes of schools $350, $270, $189 respectively; and during 1904 they received $325, $250, and $165 each. The state superintendent in his biennial report makes the statement that "it is confidently expected that the coming legislature will increase the amount to $20,000 annually," and he makes this significant comment concerning the expenditure that, "no money expended for educational purposes brings larger returns to the state than does that appropriated for high school aid. The aid of high schools completes the system of our schools from primary to university. . . . The department believes that the small appropriation designed to aid rural schools of high standard would accomplish astonishing results in our rural schools."

New Hampshire provides for the high school tuition of pupils residing in districts not maintaining a high school, and also gives a direct bonus for expert supervision of rural and village districts. Any town not maintaining a high school or academy is required to pay the tuition of all children attending any approved high school or academy. This tuition is to be based on the average cost per pupil in the academy or high school where he attends. No town shall pay more than

$40 per pupil. The state reimburses in part the districts which pay the tuition of pupils who attend such schools. Annually $8000 are appropriated from the state treasury for the payment of such tuitions. The rebates are estimated in proportion to the tax valuation in each district. If the tax rate is from $16.50 to $17.49, one-tenth of the tuition is paid: up to $18.49, two-tenths; up to $19.49, three-tenths; up to $20.49, four-tenths. If the tax rate is as high as $24.50, nine-tenths are paid, and if they are over $25.49, the whole of such tuition is rebated.

By "high school" or "academy" the law contemplates schools having courses of not less than four years, properly equipped, and giving instruction in such subjects as are required for admission to college, technical schools, normal schools; and including reasonable instruction in the constitution of the United States and the constitution of New Hampshire. Schools must be approved by the state superintendent.

New Hampshire has what is known as a literary fund derived from "the taxes collected by the state upon deposits, stocks, and attending accumulations of depositors, stockholders of savings banks, trust companies, loan and trust companies, loan and banking companies, building and loan associations, and other similar corporations who do not reside in the state or whose residence is unknown." This literary fund is distributed to districts upon the basis of the number of pupils who have actually attended school. One-fifth of the amount may be applied to the purchase of blackboards, dictionaries, maps, charts, and school apparatus. In order to stimulate rural towns and the villages to employ superintendents, it is provided that any town employing as a superintendent a person holding a permanent state teachers' certificate shall be reimbursed by the state to the amount of one-half the superintendent's salary. Such districts may include not fewer than twenty nor more than sixty teachers. The sum of $25,000 per year is appropriated from the state treasury for this purpose.

New York established a library fund in aid of secondary

education as early as 1790. Approximately $350,000 are now appropriated annually for that purpose. It affords about $250 yearly to each district levying an equal amount. Apparatus may also be purchased with this fund. In 1903 a law was passed appropriating $100,000 annually to pay the tuition of non-resident pupils in established high schools. Payment is made on the basis of $20 per year for each pupil. For some years teachers' training classes have been maintained at state expense in connection with secondary schools. At present $100,000 are yielded annually.

Pennsylvania in 1895 provided for state aid to three classes of high schools. A high school maintaining four years of study beyond the common school is regarded as in the first class and receives annually $800. One maintaining a course of three years is in the second class and receives annually $600; and one maintaining a course of two years is known as a school of the third grade and receives annually $400. If the total state appropriation is not sufficient to pay the entire sum to each school, it is distributed among them in proportion to the number of years of advanced study maintained in its courses of instruction. Each high school is required to employ at least one teacher legally certified to teach book-keeping, civics, general history, algebra, geometry, trigonometry (including plane surveying), rhetoric, English literature, Latin (including Cæsar, Virgil, and Cicero), elementary physics, chemistry (including chemistry of the soils), botany, zoölogy (including entomology.) No teacher may be employed to teach any branch other than those enumerated in his or her certificate. The course of study must receive the approval of the state superintendent.

Rhode Island arrives at similar results by a slightly different method. The law provides that approved schools may receive annually from the state $20 for each pupil for the first twenty-five pupils; and $10 for the second twenty-five pupils. Also that towns not maintaining high schools but making provision for the free attendance of its children in some high school or academy approved by the state board, shall be entitled to receive aid upon the same basis. Superintendent

Stockdale says of this, "No step taken on the part of the common schools during the past few years exceeds in consequence that by means of which those schools in our smaller towns away from high schools were brought into contact therewith thru the aid granted by the state. Many a country boy and girl is to-day assisted to a higher education such as was not possible under the old régime" (Report 1904, p. 82). In Rhode Island there is also a provision for state aid in the purchase of apparatus and books of reference. Superintendent Stockdale believes that this is money well expended, "and a proof of the strong, fostering care which the state has ever manifested toward our schools." So far they have distributed atlases, charts for natural science, history, music, numbers, physiology, reading; encyclopedias; dictionaries; globes; maps; numeral frames; organs and drums; supplementary reading texts; texts of reference; pedagogical texts; song books; chemical apparatus; materials for cooking, drawing, the study of electricity, gymnastics; stereopticon slides; pencil sharpeners; pictures; typewriters; mimeographs; duplicators; science models; apparatus for primary work.

Tennessee, while not granting state aid, recognizes the same principle by providing for special county taxes for the purpose of maintaining high schools. This special tax is not to exceed fifteen cents on $100 on all taxable property. The county high schools are to be graded by the county board of education under the general regulations of the state superintendent and the county superintendent.

Vermont provides that every town shall establish and maintain a high school or provide higher instruction for its advanced pupils. Towns and cities of over twenty-five hundred inhabitants or towns having within their limits an academy, seminary, or high school, are required to provide free high school instruction. Other towns must provide for the free high school instruction in other institutions. The tuitions paid for such instruction shall not exceed $8 per term or $24 per year for each pupil. Vermont has a statute providing that towns maintaining approved high schools or approved incorporated academies, having paid out forty per cent. of its total

taxes for school purposes, shall receive a sum equal to one-fourth of the sum expended for tuitions. Towns having raised fifty per cent. for school purposes shall receive one-half the sum expended for tuitions; and towns having raised sixty per cent. for school purposes shall receive a sum equal to three-fourths of the sum expended for tuitions; and towns having raised seventy per cent. or more for school purposes shall receive an amount equal to the entire sum raised for tuitions.

The state of Washington provides for what are known as union schools; that is, schools formed by consolidation of two or more adjacent school districts which unite for the purpose of maintaining a higher grade of school. The sum of $100 annually is appropriated for each grade above the grammar grade maintained in such schools. It is enacted that each grade receiving state bonus must have at least four pupils with an average attendance of at least three pupils for six months during the preceding school year. No pupils below the seventh grade may be admitted to any such union high school. Prior to the enactment of the regulation regarding the number constituting a grade, the state superintendent remarks that frequently one pupil attending for a single day claimed eligibility to the $100 bonus.

In many states there is evidently dissatisfaction with the usual mode of distributing public school funds according to the number of pupils of school age in the district. It is claimed by many writers and by several state superintendents that a more equitable basis for distribution of the state money would be that of actual school attendance. State Superintendent W. W. Welch of Montana writes that " it is illogical to argue that the state from the standpoint of law and equity must apportion to each child of the legal school age a fixed sum of money regardless of the fact whether or not the child ever attends school. If this were true, then the state is indebted every year to each child of the scholastic age a fixed part of the per capita apportionment and in case the child cannot or does not attend school, the state should pay in cash to such child or to its legal guardian all the money apportioned to it. But to do this last act would involve an absurdity as well as a

violation of the plain provisions of the statutes of Montana, which require that the available school funds shall be used for the payment of teachers' salaries and certain other school expenses. The conclusion, therefore, is irresistible that the state does not apportion its public school funds to the children of the scholastic age individually but collectively; that is to say, in groups legally formed in the school districts of communities" (Report 1901-02, p. 9).

Undoubtedly the distribution of funds upon the basis of attendance would open the eyes of many voters. They would not be content with receiving a smaller amount of the state money than that apportioned to other districts, and consequently would make efforts to secure a larger daily attendance and a longer school year.

Nebraska provides for the establishment of free high schools which must be open to non-residents from districts not provided with high schools. State Superintendent Fowler fathered a bill in the last legislature seeking a more equitable distribution of the state common school fund. He argued along lines similar to those maintained by the state superintendent of Montana. He maintained that the great object of the bill was to provide free high school privileges for the great number of boys and girls whose education cannot be profitably pursued in the rural schools. He said, "We are thus aiding high school districts by state apportionment to give greater advantages to these high school pupils. If this state aid were withheld from the high school, many high school districts would be forced to cut out their high school courses of study altogether." At the present time he states that there are more than a dozen counties in the state without a good high school, but that the passage of the bill would make it possible for each of these counties to have at least one good high school and thus place the free high school privileges within the reach of every farmer boy and every farmer girl in the state. "Every city, town, village, and hamlet in the state would have opportunity to share in the benefit of such a measure. It would bridge the gulf now existing between the common school and the university. On a conservative

estimate there would be at least thirty-five hundred country boys and country girls taking advantage of the free high school privileges offered under this act. These boys and girls would be under the instruction of over five hundred trained teachers. It would place at the disposal of the state $2,500,000 in school buildings, grounds, apparatus, books, and libraries for the education of this great army of young people in the duties of American citizenship."

State Superintendent LeFevre of Texas recommended in his biennial report for 1901-02 that the state appropriate from $500 to $1000 for each school that would equip a department of manual training in connection with its high school. He also recommended what seems a very sensible plan, namely: that the state appropriate a certain sum up to the limit of about $50, to equal any sum which the high school board would be willing to appropriate for special library purposes. He remarks that this plan would be infinitely better than the traveling library plan as a method of state assistance. The traveling library plan, which has been carried out in several states, is far more costly and in his judgment far less efficacious. In his conclusion I heartily concur. Superintendent LeFevre also discusses the basis of apportionment of the state funds. While not recommending a better plan, he points out some weak features of the present plans. He says, "There can be no dispute of the fact that the present method of apportionment gives a larger apportioned sum for the benefit of the children who actually attend school in certain sections of the state than that raised in other sections for the benefit of similar children. In some sections ninety per cent. of the population within school age can attend the public schools, whereas in others on account of sparse settlement, poverty, ignorance, indifference, or preference for private schools, less than fifty per cent. may attend the public schools." He points out as one item that the annual census taken upon the present basis costs the state $36,000 a year; while sworn reports of average attendance or enrollment in schools would cost nothing. He further states: "The child of the payer of large taxes has no more rights in the public schools than the child of the poor man, nor is there any

injustice in this condition, for no fact has been more thoroly proved than that the direct pecuniary results to the rich man caused by the general development of the community more than compensate him for the school taxes he has paid. One might as reasonably claim favor in the courts on the ground that he helped pay for them when it is the equal justice between man and man maintained by the law that has enabled him to win and keep his wealth. The analogy is not strained when the same principle is applied to individual sections of one state instead of to personal individuals."

State Superintendent Whitfield of Mississippi argues for a new basis of apportionment of the state public school funds. He says: "One of the greatest needs of the state at this time is a number of well-distributed free rural high schools. Under our present law, public high schools can be maintained only in the towns. . . . Our country boys and girls who are in attendance are obliged to go to the town high school and pay tuition. The artificial distribution of wealth caused by railroads and the location of county seats has made it possible for those towns to sustain by local taxation these high schools, while the rural districts on account of sparseness of population and low taxable value are left to their own efforts alone and could not maintain schools of this character. I hold that the sources of the wealth of the state are, in the main, the country, and that the large taxable values of the town are made possible by what they receive from the country and it is right that all of the property of the state should be taxed for all of the children of the state and that it is the duty of the legislature to provide for a system of free high schools where the great body of our boys and girls can receive a good business education or, if they desire, can be prepared for our state colleges. In my opinion, nothing will so bring the State University into the affection of our rural people as the supplying of this connecting link between our present schools and the University" (Report 1904, p. 11).

He recommends that the state make an appropriation of not less than $100,000 annually to be distributed to districts which will voluntarily organize themselves into school districts of

suitable size, provide suitable schoolhouses, elect competent teachers, and maintain a high school for not less than seven months in each year. The amount given to each should equal that raised by direct taxation. He believes that such a scheme would not only provide rural high schools, but encourage by voluntary action the consolidation of two or more weak schools into a strong school of two or more teachers and a higher curriculum.

It is frequently argued that a wealthy community is not obligated to provide education for children of less fortunate communities. It is claimed that the wealthy would thus be obliged to contribute to that in which they have no participation. This argument may, however, be met by suggesting that the wealth of a large city would be impossible without the small communities. Without a market for its goods, a local market for its provisions, and the general settlement of the state, it would be impossible for the city to accumulate wealth. Perchance someone should object that large cities have developed independently of the immediate state, I would say that I use the word "state" in the large sense,—it may mean the nation. Withdraw forty million people from the rural districts and cross-roads communities and every article of wealth, every factory, every mine, and every institution would be thereby sadly depreciated. Moreover, there is a moral obligation resting upon every citizen in the state to educate to the highest possible point every individual in the state. No principle of nationality is more vital than this.

Wherever the experiment providing direct state aid has been tried it has been a decided success. No state to my knowledge has retraced its steps. The advantages obtained are so obvious that it needs little argument to continue it. By this means it is possible for the school to provide better teachers, better buildings, and better equipment. Pupils are thus enabled to receive a high school education at home and are thereby stimulated to look forward to the next stage of higher education; that is, to the college, normal school, or university. Debarred from the privileges of a high school just at the most formative period of their lives, many would

become loafers and idlers and either lose all their ideals of higher scholarship or never have such ideals developed. In communities which have a high school the pupils naturally look forward to the next higher stage of education.

Former State Superintendent Wm. K. Fowler of Nebraska in arguing for state aid for the maintenance of high schools said: "If the state levy for university purposes is proper and legal, surely state aid for high school education for the youth on our farms should be. The high schools constitute the ninth, tenth, eleventh and twelfth grades or years of the public school course; the university work may be described as the thirteenth, fourteenth, fifteenth and sixteenth grades or years in the course. The high schools of Nebraska enroll seven or eight pupils to the university's one, but seven of every eight in the high school live in the cities or villages of the state. One or two are the farmer's boy and girl who pay tuition. . . . The law simply asks that the farmer boy and the farmer girl be offered the same high school privileges that the the boy and the girl in the city and the village now enjoy. . . . The proposed law would bridge the gap now existing between the rural school and the university. It would make it possible for every county in the state to have at least one good high school with a two-year, a three-year, or a four-year course of study." He says that at the present time in only 445 districts of the 6667 districts in Nebraska do pupils have free tuition above the eighth grade or common course (Report 1905, p. 27). A bill designed to secure state aid was before the last legislature of Nebraska. State Superintendent McBrien, in a personal letter to me, expressed regret that the measure failed to become a law.

I have had abundant opportunity to study for many years the practical workings of the law in Wisconsin. So far as I have observed, this aid has not tended to cause the people to reduce taxes. They almost invariably add the $500 provided by the state to the usual sum expended. After they have observed the workings of the school for a time under the more adequate support they usually voluntarily increase the taxation still further. State Superintendent Cary in his report

for 1904 wrote of the plan: "I attribute it to the results of the work accomplished in the graded schools that more high schools have been established within the last two years than in any equal length of time in the history of the state. The marked increase in the number of state graded schools, the increased efficiency and growth of each individual school, together with the establishment of such schools in remote farming sections, supplementing the large one-room school, and causing in other instances two or more schools to unite to form a state graded school, verifies the statement that no educational law in recent years has done more to advance the cause of education than the state graded school law of 1901. . . . The improvement of the graded school during the past two years has been very marked. Steady growth and improvement have existed thruout the state. Country schools of one department have been stimulated to organize state graded schools of two departments. Graded schools of two departments have pushed on and organized schools of three or more departments. The larger graded schools have organized high schools. Thruout the state these schools are being equipped with all necessary apparatus. In many instances systems of heating and ventilating are being put in. The work has been organized and graded in conformity to the state course of study. Better teachers have been procured at higher salaries; sanitary conditions of school buildings and outbuildings have been greatly improved, and the general tendency in these schools has been toward a steady advancement."

That the schools are popular with the people and desired by them is evidenced by their clamor for them when opportunity is provided. Superintendent Cary writes (Report 1904, p. 76): "The number of state graded schools has materially increased every year since the passage of the law. In the year 1902-03 there were 131 schools of the first class and 194 of the second class. In the year 1903-04 there were 144 of the first class and 201 of the second class. Preliminary reports received at the office for the year 1904-05 show applications of 146 of the first class and 218 of the second class. Nine of

the first-class graded schools became high schools during the present year of 1904."

Former State Superintendent Lewis of Minnesota paid the following high tribute to the plan of giving special aid to graded and high schools: "No finer scheme has ever been worked out by a legislature for improving common schools than the Minnesota scheme, and the phenomenally and unprecedentedly rapid increase in the number of high and graded schools in this state and the number of pupils receiving instruction in these schools, as well as the improvement of the quality of the instruction imparted, is a splendid testimonial to the Minnesota legislation. In the rural and semi-graded schools progress and improvement in the conditions and environments are equally noticeable" (Report 1903, p. 28).

Superintendent May L. Scott of Idaho believes in state aid, as evidenced by her report for 1903-04. She writes: "I regard manual training a help to academic studies. I believe that it is an equal stimulus of the self-activity which is the aim of all educational work. People are coming more and more to believe in the ability to do with the hand as well as to think with the head. Therefore, in order to encourage this work, I recommend that the legislature make an appropriation for the maintenance of a manual training department in the public schools—authorizing the State Board of Education to duplicate an appropriation raised by a school district for the purpose of equipment and instruction in this department."

The arguments in favor of special state aid to high schools seem numerous and convincing. It is to be hoped that erelong all the states of the Union will follow the example of the thirteen which have so unanimously declared for this form of support. To provide aid of this sort would contribute much to the development of perhaps the most important section of our school organization, that dealing with the adolescent mind. This is the period when the ideals for the whole life of the individual are crystallized. How important that they be the richest and noblest that may be provided by the state!

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IV

SECONDHAND SCIENCE AND CHILDREN'S REASONING

When science began to be taught in the secondary and elementary schools, there was a period of conflict which, on the one hand, called forth some of the sharpest criticism upon the value of these subjects in education, and, on the other, led to many alluring expressions of the expectations indulged in by those in love with nature and ambitious for richer opportunities for their pupils. It was a time of hopes and fears. The present has, contradictorily enough, shown us the realization of both these hopes and these fears, but which of them in larger proportion is sometimes difficult to say.

Science teaching, after having stimulated laboratory and research methods in other subjects, has reverted in many quarters to an inadequate classical treatment in its own field. In view of the fact that the older disciplines have been at work for centuries, it was to have been expected that the conscious and unconscious methods they pursued should have arrived at a high degree of excellence. These methods are, however, quite unsuited for transfer. The same kind of training is not to be expected; and altho classics and their allied subjects may develop reasoning and observation as well as memory and imagination, it is a different kind of reasoning from that which properly obtains in the sciences. Perhaps it is not too much to say that it would be better to teach less science than fail to have it fulfill its characteristic ends.

In a class containing seventeen high school graduates of Boston and vicinity who had taken physics (all young women), I recently described a lesson given in a third-grade class. For this lesson the teacher had rigged up in the basement a rude windlass with a rope running along the floor. The children were allowed to handle the apparatus, and they easily discov-

ered that the rope could be wound up. At this point the teacher proposed to one boy that he might see if he could wind up the rope with someone holding back on it. He picked a boy of his size, and was surprised to find it came so easy. He then tried two, and so on till he came to six. Here he stuck, but he said that if the handle were closer up to the axle he could pull up more, as he could run it round faster. The teacher fortunately recognized this idea as the true budding of scientific method; and instead of ignoring it or deciding upon its merits dogmatically, called the attention of the rest of the class to the statement, without indicating whether she agreed with it or not. In the language of the logician, the boy had stated a working hypothesis. About half the class thought the boy's idea was right, and half did not think it was. In order to test his idea, the boy proposed to bore a hole halfway up the bar to which the handle was attached, and thus bring it closer to the axle. An augur was obtained and this was done. At this point in telling the story I stopped and asked the seventeen high school graduates if they knew what was going to happen. One only claimed to know, altho another said if she had the formula she thought she could work it out. All of the others were in doubt as to what the result of the experiment would be.

This is not an exceptional case, as far as my knowledge of high school graduates goes; and the answers to the recent questions of the Dean of the Brooklyn Polytechnic Institute relating to matters of common observation of nature indicate that such a condition of affairs is widespread. The fault is not to be laid wholly at the door of lack of work or ability on the part of either high school teachers or pupils. It is due rather to the narrowness with which preparation for college has been made, and to the consequent exclusion of free, self-organized work. The result is that independence and self-reliance, either of reasoning or observation, and the spontaneous love of nature which these spring from and engender, are not encouraged by the school, and in some cases are actually blighted by its influence. Secondhand knowledge is peddled out by the teacher, in the shape of laboratory directions, in lectures,

thru a text-book or in catechetical form. The appeal for facts is not made to nature but to the teacher, who, when he gets as far as asking the pupil what he thinks, frequently furnishes the conclusions ready-made by telling him whether he is right or wrong. In such conditions, instead of studying nature, the pupil is studying in stupid and round-about fashion the mind of the teacher, and is not being helped to investigate for himself. When, on the contrary, the facts are sufficiently convincing, the pupil does not ask the teacher whether this or that idea is right or wrong. When the little boy in the case above mentioned had placed his handle nearer the axle, he soon found that he could pull up fewer boys than before. His hypothesis, useful while it lasted, had been disproved by facts, and he did not need to turn to the teacher and ask whether he had been right or wrong. How many science pupils in the high schools ever get so far as to have an hypothesis, or if so, have the still more illuminating experience of having it either proved or disproved by actual facts?

In the elementary schools it is still rarer than in the high schools to find an intelligent appreciation of the value of true hypothesis and experiment. The teacher usually seems to have it all previously arranged, running the course of nature with one hand and her class with the other. A lesson I observed in a third grade by a teacher in training illustrates a very general practice. The teacher's subject was condensation and evaporation, and she very piously knew just what she was going to do in that half hour. She lit a spirit lamp, put a dish over it, and asked the children to say what they observed. She was a young teacher, and asked this question a little too soon. The children held their hands up, but she told them to wait a while, as they couldn't see yet what she wanted them to see. Later on the children saw "steam," or water vapor coming off from the water. "That's right," said the teacher, "where else have you seen this?" "From horses, locomotives, off sidewalks," etc., etc., the teacher responding "That's right," or indicating her approval or disapproval by other words or signs. In this way she led the children on to say that "Heat turns water into steam." This

she wrote on the board. She then brought in a bottle which had been cooling outside the window, and turned it round in the steam. The children saw the water on it. "Where does the water come from?" "From the steam." "Quite right." The questions and answers went on for a little while. I interrupted and asked the children, "What would happen if I should put the pan of water [which had been left aside meanwhile and had stopped steaming] outside the window where the bottle had come from?" They did not know. One said he didn't think anything would happen, but would like to try it. I let him take the pan to the window, when great clouds of steam came off. Here I retired without writing on the board, "Cold turns water into steam," altho the same kind of procedure that had been applied in the first place would have justified me in doing so.

The fault in the practice of the teacher above described is not in her directing the children's attention to certain facts by means of the experiment she brought in, or in her asking for observations the children had previously made. These indeed are excellences. Her fault lay in her treatment of the statement, "Heat turns water into steam." Leaving aside the way this was led up to and suggested, as soon as expressed it was pounced upon and stamped as right, evidently because it was the statement the teacher had been looking for. All other statements as to cause she was evidently prepared to ignore or reject. This one she really treated as a proved conclusion, and not as a working hypothesis which, in order to play its part, ought to have been definitely related to the previous facts that had been mentioned, and should have been expected to stimulate the observation of new facts and the production of rival hypotheses. When something of the latter kind is not done, the children feel that the exercise is a sort of guessing game, a conundrum to which the teacher only knows the answer; and even after they have obtained it they are left in such a position that they are not able to defend their conclusion. The procedure in such a case may review facts of observation and put ready-made conclusions in the children's minds; but it fails to give the independence and self-reliance

necessary to treat novel data, which is an essential of inductive reasoning. To get this independence some wonder must be awakened and a question must be aroused in the child's mind. The question, moreover, must be put in such a form, and the child must be helped to put it in such a form, that he can get the answer by a new search for facts either directly observed or obtained thru witnesses that the child has good reason to believe are reliable.

"To what extent can children reason at a given age?" is a problem which ought to be conscientiously approached by every teacher for herself. This is not usually done. The question is much more frequently settled beforehand by saying: "We do not expect children to reason so at this age," or "We now expect them to be able to reason out this or that for themselves."

Real reasoning of an independent character is frequently regarded as too unattainable for ordinary children and ordinary teachers. Reasoning is much more truthfully and profitably to be regarded as an instinct of a very fundamental kind: one which is found to a certain degree in many of the lower animals and at the beginning of mental life in the child. It is in its rudiments, as Dantec says, "the hereditary résumé of ancestral experiences covering thousands of ages during which our ancestors rubbed up against the outside world." The early races of men did not fail to reason. It was by means of their reasoning that we have the present advantages of civilization. The invention of fire, of various tools, of the first canoe, the discovery of death, etc., represent greater triumphs of reasoning than many of the more elaborate inventions and conclusions of the present day, which would, moreover, be impossible without their early forerunners. We should expect reasoning of a certain kind quite early instead of late in the child's development; and if we observe the child out of school rather than in it, we are frequently struck not only with the persistence of his inquiries and investigations, but with the extent of them. The child loves to reason, and it is by means of his reasoning that he develops.

This reasoning, however, has some features of its own.

Like the reasoning of early people, it is necessarily related to his experiences, and he must not be tested on data which he does not feel have a direct bearing on his interests in life. These interests are of course much less complicated than those of civilized adults; but within his narrower, altho gradually widening range, and applied to subjects he can handle, his conclusions are quite likely to be correct. His reasoning is simple because his experience is limited, not because his logic is defective.

If this is true, the part of the science teacher would be to widen the child's experience while keeping within the grasp of his independent reasoning capacity. We are not really widening the child's experience in this sense, when we merely interest him in facts which are given him ready-made, without inquiry or hypothesis. Many children, if asked what shape the earth is, will say "It is round," but if one enters into conversation with them and finds out their actual point of view, one soon discovers that they do not believe it is round at all. The facts they observe go against the hypothesis, and they are sufficiently truthful and sufficiently logical in the depths of their minds not to admit the unproved statement, however glibly they may conform outwardly to the demands of the teacher or the adult world. A great many things that go by the name of science are of this hearsay type.

This does not mean that the child should therefore repeat the whole history of the race and find out everything for himself without the advantage of stored experience. Quite the contrary. To be able to sift evidence offered by others is a necessary phase of investigation, but the criterion of any such sifting process is actual primary experience. If one is really reasoning, this very reasoning will itself decide in any given case whether it is more economical to get the facts directly or by the cross-examination of witnesses. If the child is to be helped to reason, it is part of his training in judgment to decide how much of one method and how much of the other is suitable in various situations. If the child is to gain power in reasoning at all, he must be allowed to use the reasoning power he already has, and must not be told by the teacher in the

cases chosen that this or that is right or wrong. He must learn to study the facts themselves, rather than to be able merely to repeat what teacher or text-book says.

The main difficulty, as above suggested, is to get down to the child's real point of view, and to go with him as far as he is able to go and to force him no farther. A little four-year-old girl walking with her father, came across some toadstools growing in the woods. "Oh, look at the little tables!" she said. The teacher who cares neither for science nor the child's point of view, if asked at this point what she would do or say, is liable to give the reply I recently received from a teacher, "I would tell the child as quickly as I could that they are not tables, but toadstools." To follow the child's lead and get her whole point of view, one would need to say, "Yes, let us look at them." Wonder is a main ingredient in the child's state of mind at this juncture. If the father feels some of this wonder himself, it will be easier for him to feel the child's wonder and thus to get close to her point of view. "I wonder how these little tables came here," she says. "Perhaps there are some little people who put them here," her father says, guessing at what she means. Both father and child are working on the same stream of thought, and it makes little difference which of them expresses the thoughts that come. The father may express the child's thoughts, or the child may express her own. The father may even express his own thoughts in as far as they are not accepted authoritatively. Let us trace a possible development, altho many others are equally possible and some perhaps more probable. "If there are little people, I wonder where they are." "Perhaps they hide in the daytime." "But all these little tables are not alike, here's one that has a top like a ball, and not like a table." "If the little people come out in the night, or when we're away, I wonder if we could see them." "I am afraid they might hear us coming and hide." "I wonder what they use the one like a ball for." "What do they make their tables out of?" "Well, let's go now, and we'll come back and see them tomorrow." "Why, here they are, and the round one is flat like the others. The little people must have been here."

"Let's take another round one and put a box on it and big stones on top, so that the little people can't move it, and then let us leave it and come back again." "Here's the box again and the stones are on it just as we left them." But when the box is taken off, the child sees the little flat tables just as before. "It can't be the little people. It must be something else. Perhaps there are no little people," etc., etc.

We have imagined the latter part of this experience rather than kept, as we have done in the other instances, to actual cases, because the imagination of what may happen is necessary to the teacher, and an instance of it is not out of place. No doubt such a piece of imagination is visionary; and if the teacher intended to make this vision come true in its details, or expected the child to walk along this path and fall into this particular trap, as Rousseau sometimes seems to suggest as a suitable practice, he would be missing the whole drift of the present argument. If, at any point, either the child or the teacher, working in the child's stream of thought, can get a hint of a more direct way to a satisfactory explanation, it should be adopted at once. All real short-circuiting is intellectually an advantage. We have here, however, the case of a child only four years old, and one who, we have presumed, has not yet attained a conception of growth as applied to plants. This should not seem strange when we remember that the Indians of the Hudson Bay region could not be persuaded to plant beans because they had never observed and could not believe that plants grew from a seed. If this is the experience which will yield a conception of growth strong enough to meet the other natural hypotheses in the field, then we would not be devoting too much trouble to this work if twice the time needed in the above process were required.

At the same time, whether the child gets to a given conclusion to-day or next year is not the most important point; the important thing is that he makes a real advance, and not an illusory one, that the old point of view really changes into a new point of view for good and sufficient reasons and because of facts that can be obtained. To do anything else is like committing an assault upon the child. It is not helping

his reasoning power, but killing it. That the child should remain at what we call the mythical point of view for years is to be expected. If he doesn't care to take the trouble to help get the box and stones to prove or disprove his hypothesis, there need be no regret on the part of his teacher. The land of myth is a goodly land. The science teacher ought to know his way in it. It is not simply a land of imagination. It is also one of reasoning. When both imagination and reasoning get more vigorous, they become sharper and more skeptical, and both are carried to a higher stage. It is a process of growth.

The danger is that with our too prevalent centrally authorized, secondhand science, the power of growth is checked; and this so-called science becomes worse than myth, since it is not backed up by things as they appear, even superficially; nor does it offer an explanation of them capable of being defended by the pupil, but is hooked on adventitiously like a tapeworm in the memory, useful only at times of examination for display, and because such tapeworms are fashionable.

How can the teacher proceed so that she really gets the child's point of view and develops this along its own lines? This is not so difficult if the teacher is not obsessed by her own preconceived lesson plan or course of study, scheduled to pass certain way stations and arrive at the terminus on the hour of the day and at the season of the year duly stated in the time table. To dispense with such an obsession, however, is not to get rid of planning: it is to make the planning larger and better suited to the mental growth of the child. An example of what may be done by mere beginners may be of benefit. The training class in a city Normal School recently attempted the problem of the lesson on steam already described, their main idea being to see to what extent the children could reason. Some of their experiments were tried in classes, and some with little groups at home, with about the same result. In the case of the groups at home, the children were free to leave if they wished. To what extent would my pupils stay with me if they were free to leave, might be a very profitable test question which every teacher might ask herself. In the

following report of one of these lessons, selected for its brevity, and not in any way exceptional, the preliminary account of the way of approach is also inserted.

My experience in approaching children: A close acquaintance with a child and his ways is essential when trying to get good reasoning from him. When I began I did not think this necessary. I now ask as few questions and in as unoffending a manner as possible. In this way I get the children to take the part of the teacher, and find that they give eagerly whatever knowledge they have. Many a time a child's reasoning powers blazed forth with a brilliancy that was remarkable. The children's quaint sayings are full of conclusions drawn from an imaginative brain. . .

Experiment with steam: I put some cold water into a pan, and as I placed it over the gas, I asked a child what she thought would happen. After thinking for a moment, she said smoke would come off. When the water began to boil, she pointed to the vapor and said that that was smoke. "Where does it come from?" "From the water," was her answer. "It came from the water because there was a fire under the water, making it burn." "Do you think that smoke is the same as the kind that comes from burning paper?" I asked her. "Yes, of course," she replied. When the paper was burnt, she said that the smoke of the burning paper seemed thicker, dryer, and did not burn her hand when she held it over it. "Smoke from the water was wet," she said. A piece of cold glass held over the boiling water showed that there was dampness in the "smoke" from the water, and by tasting the liquid on the glass, the child found that it was water. That nothing would happen when the pan of warm water was put outside the window was the child's theory. When the steam came off, she said that the air outside must be making the water hot. I told the child to feel of the air and then of the water, and see if her theory was correct. "No, it must be the cold air made the steam show." As she said this, she thought that maybe the same thing was true in the room. To her delight she found that it was, after having proved it by several experiences.

Work of the kind just described starts with the initiative of the teacher, but the point of view of the child can be even more easily obtained when the work is organized by himself or with the co-operation of his equals. As an example of this I may cite the following case. A group of these third-grade boys came to the teacher, saying they wanted to see if ants could hear. They asked her to give them a half hour of the school time which had been laid aside for such purposes. They had provided themselves with mouth organs, etc. The teacher considered that the half hour would not be wasted, and after hearing their plan, and perhaps giving them criticism

and advice, gave them permission. They reported that they could not decide. They had counted the ants that came up out of the hole during the sounding of the various instruments, and found that there were about the same number as when there were no sounds made, altho one boy claimed that there were a few more and that perhaps they could hear. But while they gave up this problem they had found another. Whether ants could hear or not, they wanted to see whether they "went around like dogs, by smell," and they asked for more time for this investigation. It was the springtime, when the ants came out and moved around their holes for a few hours only in the warm part of the day. They chose a hole near a large flagstone on which they marked with chalk the course of each ant that came out of the hole. They made a map of this on a piece of paper in order to show the rest of the children of the grade. After the ant had gone a certain distance they touched him, and in many cases he went back into the hole. They found that when the ants were out about two or three feet, they did not go back along their track, but when out a longer distance, they did. The latter observation supported the hypothesis of the boy who thought it likely that perhaps they "went around like dogs," while the former observation went against it. They excluded the hypothesis that as they got near they saw the hole any better, as the hole was lower than the flagstone. The boy who advanced the first hypothesis said that when the ants were close in, there might be lots of tracks made by other ants which had not been marked, as there were a great many more ants moving around near the hole than farther out, and altho the returning ant did not follow his track, yet he didn't go straight to the hole, either. Farther out there might be but one track which they had marked. The theory of smell was accepted as demonstrated.

They returned, however, with still another problem. They had been poking sticks down the ants' hole, and wondering how far down it went. Some weeks before this they had been molding candles in illustration of early New England life, and one of the boys said, "If we had some candle grease and poured it down one of these holes, and then dug it up, we

would see where it went to." They expressed this to the teacher, who helped them to get some paraffin. They thought they ought to have enough, and provided themselves with nearly a pint. They melted this over a spirit lamp out at the ants' hole, meanwhile preventing the ants from going in. When the paraffin was melted, they poured it down. Nearly the whole of it disappeared. Then they commenced to dig the cast up, carefully following its branches in every direction. The discoverers of Herculaneum or Pompeii probably had no greater pleasure than these boys in unearthing their buried city. They broke the cast somewhat, but put it together the best they could, took it in to the class, showed it and explained it, and later had a photograph made of it by another group of boys who had themselves organized into a group which was called the photographic group.

Whether Tarde's hypothesis that all reasoning is social is correct or not, there can be little question that social organization greatly stimulates the process by giving the individual reasoner both the help of criticism and the sense of social serviceableness in cases of success. Altho this whole article has been a plea for what is colloquially called independent reasoning, it should be realized that what is aimed at is rather a displacement of the exclusive approval of the teacher for the broader social interest and approval of the whole class, including here the child within the heart of the teacher. The judgment of his peers, even when unfavorable, cannot be dispensed with by any reasoner. If it is difficult to prove that it is always society which reasons in and thru the individual, at least it is plain that he reasons best who is in free contact with a social environment sufficiently close to his own level to permit of his making and unmaking its opinions, rather than being constantly dominated by a semi-supernatural being who is always right—even when he isn't.

Finally, if such work is possible for children of an early age, it is much more possible higher up, and the principal thing that prevents it is the stereotyped school habit of lecture, text-book, or catechetical instruction. Part of this is a remnant of the "method" disease which formerly infested our

normal schools, and ludicrously enough, seems to hang on with special stubbornness in high schools and colleges, that have, according to their own account, never needed any method. The upper grades and the high schools are pre-eminently adapted to the cultivation of scientific reasoning, and the present dissatisfaction with the laboratory method is not founded on any failure of capacity on the part of the pupils of this age. It is to be attributed to the forcing upon these pupils of a constantly increasing burden of fine measurements, calculation, mere exercises in so-called observation and experiment, from which the wonder, and the penetrating, organizing question that arises from it, has entirely disappeared. It is because the work is dictated from the outside by the teacher, or by authorities above the teacher, that the free spirit of investigation is stifled at its birth. We must return to the beginning, and free our pupils from these trammels.

COLIN A. SCOTT

BOSTON NORMAL SCHOOL

V

PLACE OF APPLIED EDUCATION[1]

Broadly considered, practical education is that designed for agriculture, the industries, and commercial life. These three great interests make a double demand upon our educational system: for special schools of agriculture, technology or mechanics arts, and commerce; and secondly, for a larger recognition of the agricultural, industrial, and commercial elements in our general schemes of education. The recent multiplication of material on every phase of applied education has led to confusion on the part of those working in the different fields, and a general haziness as to the purposes of education in the direction above indicated. Thus it is that stanch upholders of manual training for high schools strongly oppose introducing any manual training into grammar schools; some identified with higher schools of commerce are against secondary schools of commerce; some believing in manual training question the worth of commercial education, and vice versa; and frequently schools in which manual training is taught are termed trade schools and those teaching commercial subjects are considered business colleges. It is too much to hope that any definition of terms or limiting of fields at this time will be final, but may we not, from such a discussion as this, help to clear applied education of some of its confusion and vagueness?

An added element of confusion is the presence of the private school, supported by tuition fees and conducted primarily for profit. In the private schools both instruction and the working tools of instruction, as books, supplies, etc., are paid for by those who attend. Students of the private schools naturally wish an adaptation of their instruction to some direct and immediate end, and the aim of these schools is necessarily different from that of public or community schools.

[1] An address before the Association of Schools and Colleges for the Middle States and Maryland, Annapolis, Md., December 1, 1905.

Public high schools, with private academies and institutes and institutions of college and university rank, supported either entirely or largely by appropriations or bequests are all to be classed as community institutions. Public support and private philanthropy impose a community obligation, and education in schools of this class should be planned with that broad view which considers community needs and community consequences. The aims of the institutions last named should be not the immediate and direct benefit to the individual, but the more remote and indirect advantage to society. Thus it is the duty of the state or social order to make present sacrifices for the knowledge, character, and efficiency of men of the future.[2]

Confusion exists as to the effect of introducing applied education as an element in general education. Many of the so-called special schools are largely given over to general work, nor does the special element prevent the general work from being done as well in these schools as it is done in other schools of corresponding grade. A detailed discussion under manual training and book work led to the conclusion that, "pupils taking manual training as part of their school work, in regular school hours, accomplish as much academic work as, or more than, those pupils who devote the same number of hours to school work without the manual training."[3] Commercial high schools have been long enough established to show that their teaching of English, modern languages, history, and mathematics need not be inferior to the teaching of these subjects in other sorts of schools. It was the writer's good fortune recently to see something of the excellent grammar schools of Springfield, Mass., and he became convinced that the practical instruction in manual training and home economics given in the seventh and eighth years of those schools strengthened rather than weakened the other work. Applied education in the elementary schools has never been more completely misunderstood or savagely attacked than in New York City. Under the cry "fads and frills," and "neglect of the three R's," the administration of the schools is still being bitterly assailed. But an

[2] John Stuart Mill, *Political economy*, book v, ch. xi, sec. 8.

[3] Belfield, *Report of Commissioner of Labor for 1892*, p. 607.

impartial study of the facts will lead to the conclusion that the three R's were never better taught in New York than they have been in the last five years, and in addition the new elements improperly termed fads and frills are giving a new interest in the schools on the part of those who attend and a better equipment to them when they go out from the schools.[4] The fact is that narrowing the scope of educational effort does not necessarily mean an increase of efficiency even in the subjects to which the effort is limited.

It may be necessary to caution against an inference that because I am here upholding a practical education I am perforce antagonistic to all other forms of training. Special education should be provided for those of particular interests and destined to particular careers. To compel every student to take an elaborate practical course would be an injustice, as it would be an injustice to require every one to take a course in Hebrew and Sanskrit, Greek and Latin, higher mathematics, the modern languages, or engineering. There is no one educational panacea for our social ills. Different periods and different classes in the same period make varying demands which the schools should recognize and seek to satisfy. The claims for this broader applied education are two—that it should find a place as a form of special training for large and important classes of modern society, and second, it should make a larger contribution to our system of general education.

To better determine the significance of special schools, we may regard for a moment the threefold aspect of our education. There is one group of subjects that deal primarily with man, such as languages and literature, history, æsthetics and art. Subjects of this sort we call humanities. Another group of subjects is concerned primarily with nature, —the external world in which man lives. Studies from this group are broadly termed sciences. And there is a third unity in our education, just as definite as either of the preceding, which may be denominated the man-and-nature-in-interaction group of studies. Our engineering schools, schools of

[4] See Statement of Principals' Club of New York City, EDUCATIONAL REVIEW, June, 1905.

technology, schools of agriculture, courses in home economics, etc., are the outcome of a regard for this phase of education.[5]

If we consider the periods of influence of the schools just named, we shall find that classical and formal training schools, the schools that considered primarily and narrowly man and the development of his mind, occupied relatively the most important place until the third quarter of the nineteenth century. From about 1850 on there was an increasing interest in schools of pure science, which attempted to interpret and bring to man's knowledge the facts of the physical universe in which he lives, but towards the close of the nineteenth century there began a marked interest in the problem of applying knowledge of the external world to the needs of man, and so we get our various divisions of applied education. It will be necessary also to keep in mind that hitherto the applied schools have given themselves chiefly to what may be termed the production of wealth—the extraction and transforming of the riches of the earth. Schools of engineering and agriculture are of this sort; but more recently commercial schools seek to supplement the other forms of applied education by giving an equipment for the transfer and exchange of the wealth produced.

With the notion that practical education is a sop to a class in the community we should have no patience. Some in England have been bold enough to put their proposition, Industrial education for the peasant class. When a great industrial institute was established a few years since in an American city it was remarked that this school was endowed so that poor people might be taught to serve rich people. If this were the purpose the school deserved to fail. We do not want practical education as a charity; we do not want it as patronage from the snobbish rich. Education as a badge of class distinction has no place in the United States. We cannot afford to have one education for culture and another for commerce, industry, and agriculture. For long in France practical education has been sneered at as *bourgeois,* and in consequence culture has grown shallow and without the stability of character, while trade and industry have languished. In Germany practical

[5] De Garmo, "Correlation of studies," EDUCATIONAL REVIEW, May, 1893.

studies are denominated *Brodwissenschaften,* and there is the early consignment of a life to what is regarded as a higher or lower walk. This sharp division into classes has given a stolidity to German character; such a division also fails to make the most of the individual. When the sciences were introduced at Oxford they were called in derision "*stinks*" and tho there has been much progress of practical education in England her most far-seeing statesmen and her wisest scholars still regard class distinctions based on education as the greatest weakness of the British nation. We cannot then afford to have education for practical affairs as anything short of the highest education.

The task of fixing the proper place of applied education may be simplified by saying that it should go in modified forms into schools of all grades and everywhere. The Declaration of Principles of the National Educational Association in 1905 is of interest: "The association heartily approves of the efforts now being made to determine the proper place of industrial education in the public schools. We believe that the time is rapidly approaching when industrial education should be introduced into all schools and should be made to harmonize with the occupations of the community. These courses when introduced should include instruction in agriculture as well as manual training, etc." It should be said in this connection, and bearing on the above recommendation, that new subjects are not imperative to the introduction of a new education. New elements may be introduced thru old subjects, and old subjects given new direction.

First in need at the present time is applied education for rural communities. In addition to agricultural colleges there should be special forms of high schools bringing the science and the art of farming and farm home-making nearer to the people. But this is not all; the common schools in country districts should by instruction stimulate an interest in and dignify the calling to which their pupils will go. Our schools of agriculture have not had the largest success because of neglect of agricultural education in the lower schools. A recent important report on *Industrial education for rural communities*

presented to the National Educational Association, reaches the conclusion: "This Committee does not hesitate to say that in its judgment the rural schools, which train nearly one-half the school population of this country, so far as school training goes, should definitely recognize the fact that the major part of those being trained will live upon a farm; and that there should be specific, definite, technical training fitting them for the activities of farm life. Such schools will not make farmers nor housekeepers, but they will interest boys and girls in farming and housekeeping and the problems connected with these two important vocations." It has been said, not without reason, that the neglect of applied education for country people is a cause of the too evident dissatisfaction of these people with their lot. By way of suggestion it may be said that the elements of agriculture can be introduced into rural schools in connection with a study of geography and as a substitute for the various forms of science or nature-study already being followed.

Sydney Smith was so annoyed by domestic difficulties that he once wished for a human society modeled after a hive of bees, where all workers were neuters and were born to their station. This was a desperate and futile wish, but it would no doubt be at present echoed by many employers of domestic labor. Present difficulties of labor for the home are, I believe, quite as much the fault of the mistress as of the maid, and in urban and rural communities alike the girls should be given an education to fit them for work as home-makers. Applied education in the direction of home economics has scarcely begun, yet it has gone far enough to show us that here is a field of great practical utility. Sewing, cooking, care of a house, sanitary science, dietetics, home economics, these and other fields are available, and in this way valuable studies in æsthetics, chemistry, and applied economics may be given to the girls of America as a part of their education. Education of the sort here described should be furnished in the seventh and eighth years of the elementary school and during the high-school period. In addition to this more general work which may be given in all schools, there is a place for special industrial

education for girls in technical high schools and evening schools. The last-named institutions should certainly be furnished in the larger centers of population.

Industrial education for boys may well be supplied as supplementary training in the seventh and eighth years of the elementary schools and during the high-school period, and also in more technical day and evening schools of mechanics arts, and in advanced institutions of technology and engineering. For the last two years of the elementary school and in the high-school period manual training for boys should find a place as a method in education rather than a means of acquiring skill. In the period from twelve to eighteen years boys have a restlessness and desire for activity which can be given direction and turned to good account in shop work. City boys particularly need this form of education. They have little opportunity to do work with their hands and may be given an all-aroundness of development by the handling of tools and making of useful articles.

Of advanced industrial education in schools of technology and engineering little need be said. The educational and practical work of these institutions has been established by above twenty-five years of experience, so that their place is definite; they are recognized as an integral and necessary part of our higher education.

Two other forms of industrial education should be noted; one is a trade school or school of mechanics arts to serve as a preparation for those who are to become artisans, and the other a technical continuation school for those already employed in the arts. In my opinion the trade school might well be supplied for those of secondary school age, and while such a school need not neglect the elements of a general education these should probably be reduced to a minimum, and the chief emphasis placed on the giving of technical skill. Schools of trades are almost unknown in American education tho they have long existed in Europe, particularly in Germany. The need for trade schools is obvious when we consider that by narrow specialization in industry men are no longer given an opportunity to become expert in the trades, and in addition

the trades unions often discourage apprenticeships. From present tendencies we must establish trade schools, or choose between two undesirable alternatives, either be without skilled workmen or import them from abroad. Endowed institutions or public education or both should furnish at our great industrial centers an opportunity to learn thoroly the chief trades practiced at those centers.

The need for the technical continuation schools is already felt, and evening schools of trades, educational centers for working people, and other forms of night schools are quite generally conducted. As a juror at the St. Louis Exposition I had to pass on the exhibits of several of these special schools for adult education. In some cases there was the evidence of an attempt to train and assimilate a recently arrived immigrant class; other schools are for the increased efficiency of American artisans, and others have the technical work reduced to a minimum and are giving much in the direction of general education. The need of these schools is very great; much the larger proportion of our population does not go beyond the elementary school, and if the education of the elementary school is to be retained and turned to good account then there must be provision for rearing an educational superstructure on the foundation which the elementary school has laid. Grave dangers are presented to our body politic if we cannot make an appeal to those who go out from school at or before fourteen years of age. This appeal can be in part for increased economic efficiency, and in part for the continuance of the general education which has been earlier begun. The continuation school of the sort here described makes possible the double use of school buildings and equipment and it can turn the school into a social center for the community in which it is placed.

What has already been said bears with like force upon commercial education. We need higher schools of commerce, and I believe that they should be more liberally conceived than are some that are already existing in this country. We need many secondary schools of commerce in which the general educational element shall predominate over the technical, and we also need in our great commercial centers more highly special-

ized business schools for those of secondary school age. In addition to the foregoing there should be commercial continuation schools for those already employed in business and these evening schools should furnish an opportunity for advanced education and higher efficiency.

It remains to attempt the statement of a principle which should guide in our dealing with applied education. It seems easy of statement. Every worker in every calling should have two educations: the first general, the second special. The first education should make one a man, infinitely greater than his calling; the second education is that which gives the technical equipment by which the man may honorably and successfully follow his calling. Applied studies wisely introduced do not preclude a general education. They can be made to supplement and intensify a general education.

The question of supreme significance in this discussion is what will be the result of a practical education upon the future? Does the encouragement of training for agriculture, industry, and commerce mean, in the words of Rudyard Kipling, that

> "Little folks of little souls
> Rise up to buy and sell"?

If a utilitarian education is at the loss of manhood the sooner we discourage it the better, but if, as I believe, these branches of applied education mean a larger and better manhood, then we should give them the fullest encouragement. Education is not an affair of the church alone, it is more than moral; it is not for narrow political purposes alone, it is more than political. Education should be moral, it should be political, but quite as important, it should be economic, industrial, commercial. The following, according to President Hadley, is the threefold way that our education should improve: to make men better and sounder morally and spiritually, to make them better members of the body politic, and to make them better workers.[6] The merest statement of this ideal is sufficient to gain assent for it. Education of the heart, the head, the hand, and the bringing of these into balance in the life, this it is that will give a nobler manhood. Let no one cavil at practical education as being of

[6] *Independent*, December 15, 1900.

the earth earthy. The object of the education here discussed is "not to make money, but to make men." This practical education is dedicated to the propositions that manhood, courage, discipline, can be learned from honest toil, and that it is better for a young man to go into a school which prepares him for work on a farm, in an office or shop, and thus learn to be a useful member of society, than it is for him to dawdle aimlessly and learn to be a loafer.

Deep-seated and far-reaching conflicts are now going on in society. Appalling evidences of class spirit are apparent. Earlier political lines are disappearing and new diversions are being formed based on wealth and social differences. Fraud, commonly termed graft, has run riot. Textile strikes in New England, coal and iron strikes in Pennsylvania, labor wars in Colorado, these and many other outbreaks are but the minor notes of a swelling tide of unrest and dissatisfaction. Let us not be pessimistic, let us be firm in the belief that in the future American democracy will find solutions for the vexatious problems of the distribution of wealth, and settle the contests between labor and capital. But let us not blind our eyes to plain truth. Social welfare will be secured only by the adjustment of these conflicting elements.

No one can read the following statement of Bishop Spaulding and not think twice, " . . . our present economic and commercial systems are subversive of civilization. They sacrifice men to money; wisdom and virtue to cheap production and the amassing of capital. They foster greed in the stronger and hate in the weaker. They drive the nations to competitive struggles which are as cruel as war, and in the final result more disastrous; for their tendency is to make the rich vulgar and heartless and the poor reckless and vicious." [1]

It is the condition here described which was presented by Matthew Arnold in another way, as

> " This strange disease of modern life,
> With its sick hurry, its divided aims,
> Its heads o'erstocked, and its palsied hearts."

[1] Spaulding, *Socialism and labor*, p. 173.

It is education broadly conceived and liberally provided to which we must look for the regeneration of modern society. Public welfare is still bound up with the work of the schools. Schools which satisfactorily discharged their functions a generation ago are not adequate to satisfy present demands. If our economic communities are to be rendered safe, if modern life is to have a higher form of industrialism and commercialism, if society is to see less of selfishness and more of service, then a practical education which is at the same time liberal must find its place as an important part of our systems of instruction.

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VI

THE REVISED ACADEMIC SYLLABUS OF NEW YORK STATE

In December, 1880, the Board of Regents for the first time issued a syllabus of studies for secondary schools. Since that date six revisions have been made, the last of which appeared in July, 1905. These revisions, recurring regularly every five years, not only indicate the rate of progress in secondary schools, but also constitute a permanent and interesting record of the changes that are being made from time to time in educational ideals and educative processes. It is not intended, however, to trace this path of progress, but to state briefly some of the fundamental differences between the syllabus of 1900 and that of 1905.

The Committee of Ten, in 1893, enunciated and emphasized the doctrine that "all the subjects which make part of the secondary school course should be taught consecutively enough and extensively enough to make every subject yield that training which it is best fitted to yield." This "fundamental conception" received scant recognition in the syllabus of 1900. It provided, to be sure, four-year courses in English and Latin, three-year courses in Greek, German, and French, a two-year course in Spanish, and year-courses in algebra and plane geometry—in all twenty-one courses, expressed in years. In addition to these, however, it contained forty-four courses limited in extent to a half-year, and six others restricted to a period of ten weeks. In each of these 50 subjects of the syllabus, a student could take a separate examination and obtain credit towards a state diploma.

It is evident that under the syllabus of 1900, not a few students and schools, impelled by a natural desire to follow lines of least resistance, failed to pursue the more advanced and consecutive courses provided for them, and taking advantage

of the freedom accorded them by a large range of half-year courses, were able to obtain state credentials which not only do not meet college-entrance requirements but have inconsiderable value as evidence of sound scholarship or substantial achievement.

The truth of this statement is clearly demonstrated by an investigation recently made by the Examinations Division. It appears from the records of all students graduated in June, 1905, from 24 high schools located in villages representative of all sections of the state, that forty-three per cent. of all the counts were based upon courses running half a year or less. The showing made by the cities is more favorable. The records of 80 students taken in order from 8 cities, both large and small, disclose the fact that one-third of the counts were earned in the short courses. It should be noted that this investigation is confined to graduates.

We obtain a more comprehensive view of the extent to which the work of the schools has been given to half-year courses, when we learn that of all the answer papers written by students in the schools during the year 1903-4, $66\frac{2}{10}$ per cent. were founded upon the 50 short courses laid down in the syllabus of 1900. Expressed in general terms, this means that students in the secondary schools of the state have given half their time to short courses.

After a careful consideration of the foregoing facts, it seemed wise in the revised syllabus to establish conditions that should tend to deter students from taking up subjects of study that are primarily informational and lacking in logical sequence, and that should impel them rather to lessen the number of subjects studied, and to increase the extent to which each is pursued. It was believed that a smaller number of subjects, pursued with greater continuity and thoroness, would result in superior training and scholarship for both students and teachers.

The consequences of this decision to give in the syllabus of 1905 greater recognition to the time element in education, are as follows: (1) All half-year courses, excepting three in biologic science, have been abolished; (2) an additional year has

been given to German, French, and Spanish; (3) a year has been added to the total amount of time that may be given to the study of history and civics; (4) the six short "parallel courses" in English have been discontinued; (5) a four-year progressive course in the study of the English language and literature, and in the practice of English composition, has been prescribed in place of two years' study previously required; (6) a one-year course in elementary biology designed for the first year has been supplemented by more advanced year-courses in botany and zoölogy; and (7) the syllabus in physical geography has been extended, by including selected topics relating to structural and dynamic geology and the phenomena of the solar system.

When the Department decided to abolish half-year courses, it was confronted with an embarrassing dilemma. Either it must upset the custom long prevalent in the New York schools of carrying every subject in the school program thru the term with five lessons a week, or it must establish an ill-balanced course of studies. To illustrate, if the new rule of the Board of Regents, requiring that instruction in English be given to every class every week thruout the course, is to be observed, either the number of lessons a week must be less than five or other important subjects will be crowded out of the curriculum. Again, if the power to discern and appreciate the beautiful in form and color develops slowly and gradually, then the instruction in drawing, to be effective, must be extended beyond a term or a year. If this be done, the number of lessons a week must be small or the subject will receive more than its due share of the student's time and attention at the expense of other subjects deemed essential to symmetrical training in the secondary school. There was no escape from this dilemma. Therefore, notwithstanding the embarrassment incident to a more complex program, the Department, choosing what seemed to be the lesser evil, instituted courses having a variable number of lessons a week.

The second fundamental notion operative in the revision of the syllabus has been expressed in an attempt to present to the schools such a systematized body of essential topics in the

several subjects of study as shall assist them to establish and maintain worthy standards of instruction and scholarship. To accomplish this end, the Education Department has accepted the definitions and outlines of subject-matter recommended by authoritative committees of experts representing national organizations, as far as these have been obtainable. In this way have been formulated (1) the aim of the instruction and the work to be done in the modern foreign languages; (2) the larger topics defining the range of study in mathematics; (3) the outlined specifications for study and laboratory work in advanced botany and zoölogy; and (4), with some limitations, the definition of requirements indicating the extent and quality of the instruction to be given in Latin and Greek. In these four great fields of study, it may fairly be said that the new syllabus is in substantial accord with the recommendations made by representative experts and indorsed by the National Educational Association.

The syllabuses in physics, chemistry, and physical geography are not identical with those approved by the National Educational Association, but they are quite as broad and strong. They are even more serviceable, inasmuch as each of them comprises not only a comprehensive outline of topics, but also a series of laboratory experiments selected and defined with unprecedented care and skill.

In history four courses have been provided: ancient, European, English, and American. This is in accord with the report of the Committee of Seven made in 1899. In the year 1900 a committee selected by an association of history teachers in New England entered upon the work of preparing a "report on practical methods of teaching history with such topical outlines, references, and bibliographies as shall help teachers to put into operation such suggestions for reforms in history teaching as may be applicable to secondary schools." The results of this co-operative effort of history teachers from colleges and secondary schools were published in 1904, as *A history syllabus for secondary schools.* With the consent of the authors and publishers, and in accordance with the recommendation of a committee representing the Associated Aca-

demic Principals, this syllabus, somewhat modified, has been adopted for the state of New York. The more important topics have been printed in large type, and the schools given an option between three-hour courses and five-hour courses in ancient, European, and English history, each course running thru a year. This was done on account of the pressure of other subjects, and the belief that the number of fields of history to be included in the curriculum of many schools would be lessened by insistence on the five-hour courses.

The four-year syllabus in English has been based upon the books for reading and study designated in the uniform college entrance requirements. It is constructed on the theory that an acquaintance with literature and skill in composition are of paramount importance, and that a knowledge of the principles of rhetoric should be developed inductively from the material found in literature and put into use in the compositions of students. The study of grammar has been distributed thru the several terms, on the principle that it will be made more effective if it is kept constantly in the minds of the students. This course in English specifies the books to be read each term, suggests supplementary readings, lays down a precise and progressive plan in the different forms of composition, and is primarily designed to furnish definite and trustworthy guidance to inexperienced teachers.

An incidental feature of the revised syllabus is a one-year course in biology consisting of some study of botany, zoölogy, and human physiology. Its unity is insured by the special emphasis given to the study of the vital processes that characterize both plants and animals. It is elementary and therefore adapted to the first year. It aims at scientific teaching, but not comprehensive knowledge. It is to be a required subject for all students in secondary schools who expect to prepare for teaching in any of the twelve normal schools or fourteen city training schools within the state of New York. There is a double design in this requirement. The first is to arouse the student's sympathy for animate objects, to develop his power to make accurate observations, to train him to make an intelligible record of his knowledge, and to prepare him for subse-

quent science-study in the secondary school. The second is to make " nature-study " successful in the elementary schools, by qualifying teachers to give instruction in this subject.

The amount or range of work to be done under the present syllabus is one-fifth greater than that required by the syllabus of 1900. Hitherto the state academic diploma has been based upon a four-year curriculum which required a student to pursue three subjects of study at a time with five lessons a week in each subject. A new rule of the Board of Regents requires students hereafter to carry four instead of three subjects simultaneously, with at least 18 in place of 15 lessons a week.

This increase in requirements has been made because adequate training in the several fields of study now deemed essential for a symmetrical education in the secondary school cannot be acquired by a student taking less than four subjects at a time; because it appeared from the records of the Department that a majority of students under the requirement of 15 lessons a week obtained, on the average, a four-year diploma in three years; and because an investigation made by the Department in 1902 showed that the average number of lessons a week in the high schools of the state was already 17.8. The wisdom of this decision is amply supported by the experience of France and Germany, in the corresponding years of whose secondary schools the average number of lessons a week is respectively 25 and 30.

Closely related to the syllabus is the passing mark in the state examinations. The increasing importance of these examinations as a means of determining standards of scholarship in the state's secondary schools may be inferred from the fact that approximately 57,000 answer papers were accepted in 1884 and 397,000 in 1904. In these examinations 75 was a passing mark and 90 was a mark of honor. What is the significance of this passing mark? Does an academic diploma, issued on examinations of which 75 is the passing mark, indicate that its possessor is a successful student and fair scholar, or does it show that the student has met the minimum requirements for promotion in the several subjects of study? In other words, does the passing mark of 75 stand for scholarship merely, or for

promotion? If we accept the first alternative, and construe 75 per cent. as evidence of scholarship, we must affirm that the standard of examinations is so high that it excludes from recognition some weak and slowly developing students whose legal and moral right to whatever education they can get in a secondary school cannot be successfully questioned. If we take the second alternative, interpreting 75 to indicate only fitness for promotion, we must concede that the academic diploma is not evidence of an aptitude for learning or the attainment of considerable scholarship. After mature deliberation it was decided not to grasp either horn of this dilemma, but to establish the following scheme of differentiated credentials to go into operation with the class entering the school in September, 1905:

(1) A diploma based upon a general average of 65.
(2) A diploma based upon a general average of 75.
(3) A diploma based upon a general average of 85.
(4) A diploma based upon a general average of 90.

It was further decided that in computing general averages, the rating of any paper not below 60 may be included.

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VII

DISCUSSIONS

A TALK WITH TEACHERS OF ENGLISH ON COLLEGE ENTRANCE REQUIREMENTS

At a conference of ministers, an excited parson exclaimed, "We men of God should live with one foot on earth, and the other pointed toward Heaven." Whatever we teachers of English may think regarding the propriety of the metaphor, we must agree that, so long as we are bound down by present conditions, it is inspiring to meet occasionally, to take a look upward at ideals. One of those harassing present conditions we all have in mind. Not that we men and women who teach English are grumblers or shirks; on the whole we are known to be cheerful and hard-working, with too high a spirit to admit to others that we have a grievance. But beneath the joy and courage with which we face the day's work is the somber consciousness of a dreadful bugbear—the college requirements in English. Let teachers of English meet, any time, anywhere, and this grievance will out.

Dissatisfaction with the prescribed list of books is widespread. Of the reports sent last year to the New England Association of Teachers of English, from one hundred teachers, very few commended all the books; and the only books against which no objections were offered were *The merchant of Venice*, *Julius Cæsar*, and *The ancient mariner*. Eighteen teachers were opposed to Carlyle's *Essay on Burns* for the purpose of high-school study. Many wished to substitute one of Webster's speeches for the *Speech on conciliation with America*, and to replace Milton's *Minor poems* by *Paradise lost*. The truth is that each teacher of English, if he be worth the name, discovers that certain of the prescribed books are not adapted to the interests and stage of development of his particular classes. He knows of other books which he individually—not any other man,

or the fictitious average teacher of English, but he himself—can make of greater value to his particular pupils than certain of the prescribed works. And he says, with logic convincing at least to his fellow workmen, "Having found from five years' experience that my classes thrive better on the Warren Hastings essay than on any of the others, why should I conform to the requirement of a body of men who know nothing of me or of my classes?" Ask any teacher if the list is thoroly commendable; ask yourself the same question. There is but one answer. To select a fixed list that will commend itself, in its entirety, to the judgment of even a majority of teachers is manifestly impossible.

Surely then, to outweigh this grave objection, this general dissatisfaction, the required list must have a high object which it worthily serves. Suppose we consider for a moment what that object is and how well it is served.

First, then, what is the purpose of the required list? We may assume for the moment that those who have fixed the requirement best know its purpose. The Committee on Entrance Requirements say they hope to secure "sympathetic and comprehensive appreciation of the writings of great thinkers: and the power to use language in a clear, logical, convincing, and agreeable manner."[1] Is this the demand? No wonder you wriggle in your seats.

The Committee of Ten are less sanguine. They subordinate everything to two objects: "(1) to enable the pupil to understand the expressed thoughts of others and give expression to thoughts of his own; (2) to cultivate a taste for reading, to give the pupil some acquaintance with good literature, and to furnish him with the means of extending that acquaintance."[2]

The purpose of the examination at Harvard is to test the boy's ability rather than his knowledge of facts. First of all, the boy must know how to spell, to punctuate, and to form sentences; he is expected also to have some idea of paragraph structure. This, then, is the object of the required list as it is used at Harvard,—"first and last to test the boy's ability

[1] Report of the Committee on Entrance Requirements, p. 13.
[2] Report of the Committee of Ten, p. 86.

to say what *he* has thought and felt, and not to test his knowledge of the facts contained in the list of prescribed books." [3]

These quotations give an idea—a vague one, to be sure, yet the most definite idea available—of the objects sought by those who prescribe the books. How well does the means serve the end?

As regards the Harvard ideal, you and I must admit that the very best we have done with the prescribed list—I mean taking us as a whole—has far from satisfied the powers that live and move and have their complaints at Cambridge. Of six or seven hundred candidates for admission to Harvard College in 1902, only four per cent. received a commendable grade in the English examination; that is to say, ninety-six per cent. fell below the grade of B. In 1903, in the opinion of the Harvard examiners, twenty-eight per cent. of the applicants were "illiterate"; their work was "seriously deficient in punctuation, sentence-structure, spelling, and the use of paragraphs."

The complaint is not all within the walls of the university. Business men tell us that the work we do in high schools at present is unpractical. They find few stenographers who can spell, and few boys who can write correct letters in application for a position. Is this aim far from idealism? Perhaps so; still, if a man says, "I want an education which shall keep a good coat on my son's back," we may call his view narrow, but shall we say that he has no right to demand such an education? In *his* school days, the study of English meant reading, spelling, grammar, and we cannot deny that greater efficiency was secured in those respects than now. Whatever adornment the old education lacked, it had a real foundation.

Perhaps it is presumptuous for you and me to ask where the fault lies, for there is a weather-beaten, decrepit reply that gives all the fault to the secondary schools, which have long been accustomed to receive the dictum and the censure of the university as vassals submit to a feudal lord. But since higher institutions have taken upon themselves to prescribe for the ills of lower schools, they must share the responsibility in the results. Is their remedy efficient?

[3] *School review*, 12:331, May, 1904, Mr. John G. Hart.

Let us ask first what has been the effect of the prescribed list of books in cultivating a taste for good literature. Dr. Howells says, "The study of literature in our schools cools the pleasure which might otherwise be taken in it out of school. It ought never to be forgotten that literature can only be enjoyed in perfect freedom."[4] True, but as that very freedom is destroyed by the prescribed system, you have a right to ask that Dr. Howells and the rest at least cease condemning *you*, because you fail to make an enforced task thoroly delightful.

The university says to you, "Here is a list of books. You must teach them whether you like them or not. You must have your pupils analyze them, all of them, and then we will give an examination."

And what have you left to say to the pupil but this: "Here is a list of books. You are required to pick them to pieces, and enjoy them, all of them. When you have spent the allotted time on them, you will have an examination." The medicine is indeed well-suited, not to its purpose, but for deadening the nerves of sympathy and enthusiasm. No wonder you ask in bewilderment, "Shall I teach literature, or prepare my classes for the impending examination?"

Some of you, I know well, are so enthusiastic that you throw off the bonds for the moment; and your pupils, caught unawares, forget the prescribed task and the examination. They enjoy literature, really enjoy literature, in spite of the devices of uniform requirement committees. But in such cases—we may as well be frank with each other—success comes because we are bound by no prescribed method, because we refuse to be rushed into the folly of placing analysis before synthesis, because we disregard those books prepared for examination purposes, and disfigured with foot-notes "like little dogs barking at the text"; yes, more than all that, we succeed because, without trying to cover the prescribed literary field, we boldly venture outside to more fertile places; because, finally, we have lost sight of the goal—the examination.

The tendency of the required list and the dread examina-

[4] William Dean Howells, in *Harper's monthly* for November, 1903.

tion is to misguide the teacher and to kill, not "to cultivate, a taste for reading." There are so many books, that you are obliged to *rush* thru them; you forget that *Macbeth* is a *play!* And when you are criticised for not reading it aloud, you point to the long list of required books, and reply, "lack of time." You feel so keenly the discrepancy between the enjoyment of literature and the desires of some examining board that, after teaching a book as you think it should be taught, you feel obliged to teach it again with reference to what you think some board of examiners may expect. The more conscientious you are, the more liable you are to teach the book to death.[5] All this you do under the plan which aims to secure "sympathetic and comprehensive appreciation of the writings of great thinkers"!

Is it not a marvel that men who accept interest as "the greatest word in Education," and who recognize the advantages of the elective principle, should refuse to apply either to the question of prescribed books? Can you cultivate interest in literature by forcing boys to read Carlyle's *Essay on Burns?* Perhaps *you* have the skill to do it with your particular classes. But Mr. Allan Abbott found that of 333 boys, from many schools in all parts of the country, 43.5 per cent. had read and disliked the *Essay on Burns.* On the other hand only 4 per cent. disliked *Macbeth* and *Julius Cæsar;* and 53 per cent. were so enthusiastic over *Ivanhoe* that they wished to read it again. If the object in prescribing critical essays is, as has been said, to kill two birds with one stone—the essayist and his subject—truly the teacher of English is right who claims for the plan a large measure of success, for to many boys both the essayist and his subject are dead.

You recall that boy in your class who, as Dr. Jekyll, took the critical essays in the classroom; as Mr. Hyde, he read Hearst's *American* on the street. Why? Because the required set of books had no wholesome influence on his voluntary reading; because, instead of cultivating a taste for literature thru first appealing to the boy's interests and then

[5] *Cf.* Committee of the New England Association of Teachers of English, *School review*, 12:340, May, 1904.

luring him on and on, it frightened him away at the outset. I remember well my own difficulty in overcoming the prejudice against Thackeray caused by the fact that *Henry Esmond* was forced on me before I was ready for it. In general, prearranged lists of books are fatal to real, spontaneous interest.

The present requirements not only fail to stimulate that interest which is essential to real love of literature, but they fail also to attain their other main object,—"the power to use language in a clear, logical, convincing, and agreeable manner." The reason is, as I have heard many of you say, that the requirements force us to give proportionately too great emphasis to the study of books, too little to the cultivation of power in accurate self-expression. The long list of definitely prescribed books and the theme-writing they appear to require leave scant time to carry out the vaguer suggestions regarding general practice in composition. The tendency of the fixed requirement is to encourage among teachers the false idea that when they have gone over, under, or thru the printed list, they have fulfilled their whole duty. There is a misleading discrepancy between the expressed purposes of those who fix the requirements and the means by which they expect teachers to accomplish those purposes.

The result is that the majority of failures in the Harvard entrance examination in English are due to deficiency in elementary matters, not to the neglect of teachers to hurry boys thru the prescribed books. The fault is that the required list is too rigid and too long. This has been evident in my experience with candidates from secondary schools, mainly private schools, who have been thru the prescribed books only to fail in the June examination at Cambridge. Nearly one hundred such boys in the past five years have come to me, at a summer camp and school, for the purpose of making up their deficiencies in English. They usually ask whether they shall need all the text-books and their school notebooks on the required reading. I have replied, "All you need for the present is pencil and paper."

To prepare for the September examinations we have eight weeks, summer weeks, full of incentives to play. Sometimes

the boys are so tired from the June examinations, so weary of books, that our physician claims one of the precious weeks for rest. Every day must count. To find the weak spot and there apply a vigorous remedy is therefore our main problem. *Problem,* however, is too serious a word; ordinary tests with paper and pencil at once reveal the trouble. Many of the boys have been led thru the prescribed books with wearisome completeness, but they have not been sufficiently impressed with the fine print on page 337 of the Harvard Catalog:

> No candidate will be accepted in English whose work is seriously defective in point of spelling, punctuation, grammar, or division into paragraphs.[6]

That those who never find what they seek in such books should overlook this fine print, modestly appended to the imposing list of required books, is not surprising. The words deserve the distinction of capitals, or even red letters, if such display would not jostle the dignity of the catalog.

With this in mind, we set the boys to writing,—writing anything, provided only that the subject appeals to their interest. On this work in general composition we spend all the time—the whole summer, if necessary—until the boys are not seriously defective in the elementary points enumerated above. The result is that all but two of the boys have succeeded in accomplishing their immediate purpose; they have satisfied the higher institutions.

But the prescribed books, what of them? Ah, to be sure, there is that dreadful list. It may be that candidates have been rejected because they have failed to read *Gareth and Lynette,* or because some thinking teacher was so rebelliously independent as to have the class read *The coming of Arthur* in spite of the list which mentions only *The passing of Arthur.* But so long as the evidence points rather to the ill-use of the mother tongue and carelessness in elementary matters as the common cause of failure to satisfy college examiners, it is clear that the present requirements result in too great emphasis on a fixed list of books, too little attention to the cultivation of power in speaking and writing the language.

[6] The Harvard University Catalog, 1903–1904, p. 337.

Since we left the country parson with one foot on earth and the other pointed toward heaven, we have considered the unsatisfactory conditions under which, for better or worse, we are expected to do the day's work. Above these harassing conditions, the *Ideal* shines clear. It will be attained when every college will accept, without examination, pupils who in the judgment of the secondary schools—your school and mine—have well completed "any systematic course in combined rhetoric and literature which in amount is practically equivalent to the requirement specified."[7] The ideal will be attained when each teacher is granted, in addition to fair salary and fair honor, "the legitimate compensation of every workman,—the joy of accomplishing something according to his own ideas and in his own way;"[8] when he may disregard rigid systems and fixed lists, in order at once to guide and follow the tastes of his particular pupils; when he may adapt his choice of books to the varying receptivity of his pupils and to their real interests, until they look upon books not as grinds, but as sources of pure enjoyment,—until in their mouths the word *literature* loses its bad taste.

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PROFESSOR JASTROW'S "DISTRIBUTION OF DISTINCTION"

Professor Jastrow in his valuable paper under the title "Distribution of distinction," which appeared in the January number of the Review makes frequent reference to articles of mine that have appeared from time to time. One in particular, entitled "The best college: what is it?" (*World's work*, April, 1903), was made the subject of somewhat extended criticism, and criticism I will add quite generally merited in light of the unqualified assertions which I was there made to express. Since Professor Jastrow has taken up the cudgel—and I have wondered that some one did not—an explanation is only fair. When my paper was accepted by the editor of *World's work* it contained nearly four thousand words; when it appeared in

[7] Catalog, 1903–1904, Massachusetts Institute of Technology.
[8] W. H. Maxwell, EDUCATIONAL REVIEW, May, 1904, p. 473.

print less than one-fourth of that number. The part printed gave only the slightest description of the method of the problem, and no qualifying explanation. It was, in fact, but a series of tables and dogmatic assertions. Chagrined, I asked the privilege of printing the paper in full in some other magazine and this was done in *Education,* vol. xxiv, p. 603-13, June, 1904.

Had Professor Jastrow happened to run across it there he would, I dare say, hardly have thought it worth the while to emphasize so many of the possibilities of error, for they are there pointed out. So generally are the points that he criticised in the *World's work* paper touched upon in the *Education* article that it seems hardly worth the while to discuss them in detail at this time.

However, briefly. First. It is true that I used *The World Almanac* as the source of data for living graduates. The table is headed " Communicated to the *World Almanac* by the presidents of the respective institutions." It has, moreover, the appearance of exactness since a very large proportion of the figures are carried out to the place of units. For instance, the five colleges coming first in the edition used give 772, 72, 566 and 985 respectively. It is interesting to know that our college presidents are not taking proper care in making returns.

Second. The possible effect of the more rapid increase in student body of some colleges than of others is discussed at length in the *Education* article, as is the *lag* in making place in *Who's who.*

Third. The presence of technical students among the graduates of some colleges and not of others is also considered. However, *Who's who* contains the names of large numbers of such and we have no reasons to suppose that they are in any way discriminated against.

Fourth. The question of coeducation in its effect upon the returns is given considerable space. Even Professor Jastrow does not, if I understand his paper, follow what he asserts to be the only " fair method " and " exclude this factor absolutely."

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VIII

REVIEWS

Special method in elementary science for the common school—By C. A McMurry. New York: The Macmillan Co. 275 p. 75 cents.

This is in part a revision of McMurry's *Special method in science* (1896), and to the original book are added plans for the four upper grades of the elementary school.

The first seven chapters discuss the general bearings of "science" in elementary education under the following chapter headings: I, Introductory discussion; II, History and aim of science teaching; III, Planning the course of study and means of simplifying it; IV, The basis for selecting and arranging topics for the course of study; V, The gradual approaches to science; VI, The application of science to life; VII, Method in science lessons.

In commenting on the contents of the book, we note first the word "science" in the title. The school work under consideration is so elementary that certainly little of it is really science, but rather nature-study, as that term is now understood by most scientific men who have given attention to elementary-school work. It appears that the author felt uncertain in his use of the word "science," for the terms nature-study and science are used quite interchangeably and synonymously in his text. For example, in Chapter IX the first sentence refers to the "course of study in elementary science," and the plan for this begins five pages beyond with the bold heading, "Outline for nature-study." It is unfortunate that these terms are used so loosely in this new edition. It is time that educators drop the word "science" for elementary-school studies of nature, no matter how superficial they may be, and by so doing avoid confusion with high-school work, to which "elementary science" may be more properly applicable.

In Chapter III there is presented the now commonly accepted idea that nature-study should deal with the child's home envi-

ronment. As centers in this environment the author suggests the home, the local town, the school, the wild nature, and primary human occupations; and by selecting type materials from these centers we may get a simplified nature-study course. If, on the other hand, we accept no such guiding principles in selecting materials, we must either follow each of the natural sciences as a controlling center of study, or unsystematically pick from the field of general science—both of which alternatives are admittedly unadapted to elementary schools.

Concerning the selection and arrangement of types, the author holds that the common objects of the home and plant and animal life should come first, and topics of the physical nature-study later. Many topics from the centers of interest mentioned above should be serially arranged, developing thru the grades.

The main question of "Method in science lessons," discussed in Chapter III, is "how to get the problems of science before children in such a way as to bring them to the best exercise of their own independent powers in solving them. It consists in shrewd problem setting." Many interesting suggestions helping teachers to follow this method are given.

The "Illustrative lessons" of Chapter VII and "The course of study" of Chapter IX contain many interesting suggestions, and all teachers of nature-study will profit by carefully examining them. Like all other similar attempts in these days, when nature-study is just beginning to get serious and critical attention, these "Lessons" and the "Outline" cannot be expected to be more than a record of another teacher's theories and experiments with nature-study. Naturally there are points worthy of commendation and others inviting criticism. The outline resembles most others with which we are familiar, in that there appears to be no natural sequence of topics. For example, take in order the topics for the fourth grade: corn plant, weeds, kinds of rocks, common stars and constellations, the larger birds, cleanliness in kitchen, common tools and inventions, water in its various forms and uses, the skin, the metals, trees in winter, budding and grafting, temperance in eating and drinking, wild spring flowers, tame duck and goose, poisonous plants in the woods, care of chickens in spring, meadow flowers,

a clean cellar. This is quite typical of the series of topics for each of the eight grades.

The volume closes with about twenty-five pages of lists of "books as an aid to science teaching." This contains titles of many useful books, but the arrangement has been done so carelessly that the chapter has lost much of its possible value to those not already familiar with this special line of literature. Under "pedagogical books" we notice that five of the twenty-five have no possible connection with pedagogy. For example, Agassiz's *Methods of study in natural history*—a somewhat misleading title—is the great naturalist's last stand for his special-creation theory. Just how such technical books as Gray's *Anatomy* may aid elementary-school teachers may not be clear to teaching biologists. Under "collateral reading for children" we see Sutherland's *Book of bugs*, but if humor is to be included, it should not be forgotten that Bill Nye and Mark Twain have both contributed to the literature of insects. And finally, a "supplementary list" of well-known books—including several titles previously cited—appears to have the one merit of filling a page, for there is no suggestion as to the place of the books in the attempted grouping on the preceding pages.

We have indicated only a few of the points which invite commendation and criticism. On the whole the book is an interesting and useful contribution to the literature of nature-study, and it deserves to be read by all who are working with the deeper problems of that subject.

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Notes on German schools: with special relation to curriculum and methods of teaching—By William H. Winch. New York: Longmans, Green & Co., 1904. 265 p. $1.50 net.

With the numerous handbooks on the German school system by Russell, Bolton, Seeley, Prince, and Parsons, students of comparative education will welcome an intimate pen picture of the subjects and methods of class instruction in the elementary schools of Germany. Mr. Winch has not concerned himself with the broader problem of school organization and adminis-

tration, but he has sought to give English and American teachers detailed accounts of class lessons witnessed by him in the subjects of study taught during the compulsory period of elementary-school attendance.

Mr. Winch notes that in the United States and Germany there is wide-spread recognition of the need of comparative work, with definite tests, but that in England this need is still without noticeable recognition; and he offers the results of his labors as a preliminary study for the use of English teachers. It is useless, he thinks, to pile up work in educational exhibitions, or to show samples of great excellence, unless we know the conditions of their production.

German educational authorities, he notes, are more inclined than English to believe that the scientific problems,—psychological and other,—upon which education is based, are matters for specialistic and scientific research. The English are prone to decide such questions upon a basis of information gained from teachers and inspectors, most of whom are too busy with actual administration, even if they possess the necessary scientific equipment. In Germany, on the other hand, such questions are assigned to trained psychologists and educational experts. In Breslau, to cite but one example, the school authorities recently commissioned Professor Ebbinghaus, at the head of the psychological laboratory of the university in that city, to investigate the nature and extent of nervousness and mental fatigue among the school children of that city.

After a brief statement of the grading, hours, fees, discipline, and promotion in German schools, the author proceeds to give pen pictures of lessons in arithmetic, reading, spelling, writing, composition, history, grammar, modern language, elementary science, drawing, gymnastics, and singing witnessed in the schools of Frankfort, Hamburg, Leipzig, and Berlin. In work in arithmetic in Leipzig he noted the almost exclusive use of auditory memory in solving problems, in contrast with the readiness of the English teachers to employ the visual memory. He found the reading work in the same city exceedingly well done, but greater limitation of reading matter than in England. German teachers of history give instruction; they do not merely hear lessons from a book as in England (and America). In

fact, "saying lessons to the teacher," which is the basis of practically all work in elementary schools, and most of that in secondary schools in the United States and England, receives slight recognition in Germany. "The German teachers," says Mr. Winch, "do not hold that their object is merely to stimulate interest in this subject [history], but to give a firm basis of sound elementary information."

More surprises in store for the English (and American) teachers in the study of geography in Germany. "The pupils had no geography books, but every boy had an atlas which was clear and uncrowded; for geographical information which the map did not provide, the scholars were entirely dependent upon the oral lessons of the teacher, supplemented by such notes as he was able to give them." The German schoolboy's power of description from a map Mr. Winch thought quite astonishing.

The chief value of Mr. Winch's book lies in its painstaking and accurate descriptions of class lessons in many subjects, and at the different stages of advancement of German school children. Since English reviewers are unfailing in the detection of provincialisms and Americanisms in educational books published on this side of the Atlantic, attention may be called to the use of the word scholar for lads in their teens, and even before. The absence of an index is one of the common faults of English publications of this class.

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A college text-book of botany—By GEORGE FRANCIS ATKINSON. New York: Henry Holt & Co., 1905. xvi+737 p. $2.00 net.

The present book is a revision and elaboration of the author's *Elementary botany*, published in 1898. The plan of treatment remains essentially unchanged, the subject being discussed from physiological, morphological, and ecological standpoints. Part I, dealing with physiology, remains practically untouched, altho considerable new matter has been added in the discussion of the subjects of nutrition and digestion. In Part II, in which the principal chapters on morphology are unchanged, note should be made of the additional consideration given to

the classification and relationships of the various groups. In each of the great groups of plants attention is first directed to several examples which illustrate in a marked way the progressive stages in the development of the plant body and the reproductive processes, after which additional types are briefly considered, with a view to giving a broader understanding of the relationships as represented in the regular sequences of classes, orders, and families.

The most noteworthy departure in the book will be found in the author's treatment of ecology, Parts III and IV. This portion of the work has been completely rewritten and so extended as to form the major feature of the book. Part III is devoted to plant members in relation to environment. Consideration is given to the organization of the plant and to the special functions and relations of the different members of the plant body. Part IV deals with vegetation forms in relation to environment. The topics discussed comprise the factors of environment, the laws of migration, the analysis of plant formations and societies. The composition and character of the various plant societies of the earth are considered in considerable detail. In Part V the work closes with a study of the representative families of angiosperms. Directions are given to the student in the prosecution of his work, and suggestions are offered to the teachers in the methods of presentation and in the preparation of material and laboratory supplies.

The scheme and spirit of the book are commendable. It is to be hoped that we are passing away from the generalities of picture-book botany, and we feel sure that this presentation of the essential facts and principles of botanical science will meet with hearty approval. The advisability, however, of confining within the limits of the present volume so extended a consideration of the subject may be questioned. It is evident that the author has been obliged in many chapters to resort to an unfortunate condensation in the discussion of topics. This treatment gives at times an unevenness to the discussion and destroys the balance in the consideration of the topics. This is particularly noticeable in the chapters on morphology, where it has been necessary to mention certain orders and families with but a line of comment, whereas co-ordinate

groups, on the other hand, are apparently given undue emphasis by even a brief consideration.

It would appear to us, considering the grade of the book, that certain subjects might well have been omitted, thus allowing space for a more extended study of selected topics. Thus in the algæ the author has been obliged to content himself with the scheme of classification presented in Engler and Prantle, while the outline of the fungi must leave the student with an uncertain knowledge regarding some of the groups which many teachers will look upon as important. So also the discussion of hybridization, biotherms, etc., may be misapprehended, owing to the brevity of the presentation. It is inferred from the course of work presented in this book that the author is seeking in part to meet the want felt by many teachers of a modern text-book of comparative morphology. To be sure, the facts relating to the thallophytes do not warrant at present a very satisfactory treatment of this part of the subject, but a text co-ordinating the data available to-day and following somewhat the plan of treatment in Campbell's *Mosses and ferns* would be a most welcome contribution. In offering this opinion regarding certain features of the book we do not wish to be misunderstood. Professor Atkinson has been exceptionally fortunate in accomplishing a very difficult piece of work. The studies have been carefully prepared and this scientific survey of the botanical field will be widely appreciated.

In his treatment of ecology the author has presented the most extended discussion of the subject that is to be found in any text-book. Especially to be commended is the review of the ecological factors and the analysis of plant societies. The great mass of material that has accumulated during the past few years—much of it of indifferent value—has been utilized with discrimination, and the results are now brought together in a more logical and coherent form than heretofore.

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IX

NOTES AND NEWS

President Harper

By the death, on January 10, 1906, of President Harper of the University of Chicago, American education loses one of its great leaders, and American life one of its most striking personalities. It is too soon, and the sense of loss is too keen, to attempt any estimate of the permanent significance of President Harper's life and work. It is not too soon, however, to offer tribute in all possible ways to his truly great and high-principled nature, and to the flawless moral courage with which, for quite two years, he faced a certain death.

President Harper spent his life, all too short, in public service. Never a direct representative of any part of the nation in its governmental activity, he was none the less a great and representative public figure, and the right-thinking men and women of America well knew that he represented what they hoped for and aimed at as the best. His boundless energy touched educational activity of every form and every type. His service on the Board of Education of the city of Chicago was most valuable, and would have been epoch-marking if his proposals for the uplifting of the city schools, for the elevation of the profession of teaching, and for the more sedulous and anxious care of the children, had been more warmly supported. Not alone Chicago University, but his entire life and his noble death, are President Harper's monument. There is no one among his contemporaries who can quite take his place.

Athletic Craze in Colleges

The subject of college athletics has been so much under discussion of late years that it is not surprising that both students and faculties have been exposed to criticisms which are unjust as well as to some which are just.

Some of the criticisms assume that the colleges are more

given over to the passion for games than are the public generally. On the contrary, it is in large part the passion of the people for introducing games that stimulates the students to play them. When we read of thirty or forty thousand persons rushing to intercollegiate football games at Cambridge or New Haven, Princeton or New York, and most of these persons of respectability and intelligence and maturity, when we see that journals of the highest character devote at least a whole page to the report of a game and publish the portraits and biographies of the players as heroes of whom readers most desire to hear, may we not truthfully say that the public are as crazy about football as the students, and that the passion of the latter is only a part of the national passion which has taken possession of the country? And since this public admiration for the successful players has become so intense, is it strange that the ambition of so many young students is fired to win laurels on the playground? In short, are students alone to be censured, are colleges alone to be censured for sharing what we readily admit is an excessive interest in athletic games, but an excessive interest which has really taken possession of the nation and which is largely responsible for the undue devotion in our colleges to baseball and football. Let the public who criticise accept their just portion of the blame, in so far as blame is pronounced. One might as reasonably ask young men in college not to share in the excitement of a presidential election or as reasonably ask college faculties to prevent them from doing so, when every man out of college is wild with excitement about it. The colleges are no longer monastic establishments and cannot be regulated as if they were.

Again some criticisms seem to assume that college faculties are taking no pains to prevent abuses in athletics. They imply that colleges are institutions whose main business is athletics with an occasional lapse into intellectual pursuits. Now the fact is that our faculties, and so far as I know the faculties of our colleges and universities generally, have during the last few years in which this passion for athletics has been growing so rapidly, given attention to no subject of college administration more conscientiously than to the regulation and control of athletics. Serious abuses did manifest themselves early. Ex-

perimentation was necessary in order to determine what was the wisest and most effective way of preventing them. The difficulties were not small. But the case has been taken in hand earnestly and the results have been marked and beneficent. The college authorities as a rule have not been delinquent.

But the college faculties above all others do recognize and deplore the incidental evils still caused by the overmastering passion for great games cherished by both students and the general public. They greatly desire the cultivation of healthful outdoor exercise by all the students rather than the star acting of a few on a public occasion, and with a view to accomplishing this result they have been making efforts, in many cases like ours successful, to procure a field large enough to allow the whole body of students to take all kinds of exercise.

They regret that so often the minds of men on the teams are during the season of training for games preoccupied by their practice and they have adopted strict rules forbidding anyone who is delinquent in his studies to play in a game, and here, at least, that rule is enforced. They regret that anywhere there should be unfair and unsportsmanlike conduct in a game, and we believe that our teams do not resort to it. If anyone should permit himself to indulge in an unworthy act, our Board of Control, if made aware of it, would discipline him for it. One of the most difficult abuses to prevent is the offering of inducements to promising athletes in preparatory schools to come to this or that college, because these inducements may be and often are offered by students or graduates without the knowledge of the authorities. Recent articles in *Scribner's magazine* gave interesting particulars of this kind of proceeding in connection with Eastern colleges. It is not improbable that similar conditions exist in the West, but it is to be hoped not with the connivance of college authorities.

Indisputably, then, something remains to be done to rid college athletics of certain objectionable practices, and college faculties who have already done so much to abolish abuses are not likely to neglect their duty in the future. They all desire to secure the general participation of students in some form of outdoor activity.—From the Annual Report of 1905 of President Angell of the University of Michigan.